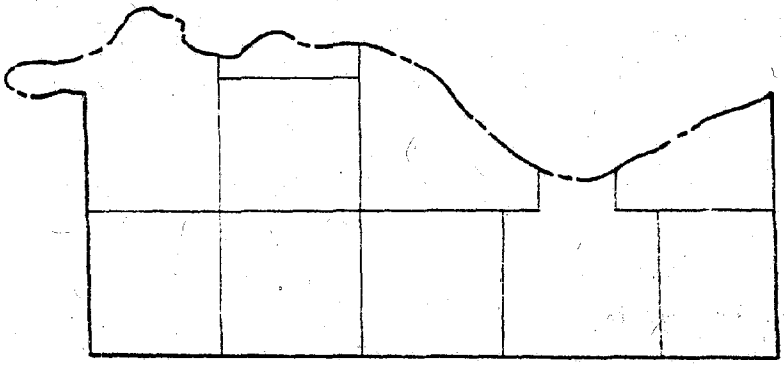
erie county ohio land use plan



COASTAL ZONE

INFORMATION CENTER

woolpert
consultants

ERIE COUNTY OFFICIAL LAND USE PLAN

AND

INDIVIDUAL OFFICIAL TOWNSHIP LAND USE PLANS

Prepared For: Erie Regional Planning Commission
2902 Columbus Avenue
Sandusky, Ohio 44870

Hooshang Mahnami, Director

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January, 1980

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ERIE REGIONAL PLANNING COMMISSION

Hooshang Mahnami, Director

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CHAPTER I

INTRODUCTION AND OVERVIEW OF ERIE COUNTY, OHIO

Erie County is one of nine (9) coastal counties along the northern-tier of the State of Ohio adjacent Lake Erie (Plate 1). Erie County has an irregular shape due to the configuration of its shoreline along Sandusky Bay in the northwestern corner of the County and along the main shoreline of Lake Erie throughout the rest of the County's northern edge. This shoreline extends for a distance of approximately 35 miles and includes both the Sandusky Bay shoreline, which constitutes the northern border of Margaretta Township, the City of Sandusky and a portion of Huron Township plus the Lake Erie shoreline which constitutes the northern boundary of the Cedar Point Chaussee, the remainder of Huron Township, the "neck" of Berlin Township and Vermilion Township, respectively, as well as of the City of Vermilion.

Erie County extends for a distance of about 28 miles in an east-west direction and for about 11 miles in a north-south direction. The County encompasses a total of 264 square miles or about 168,960 acres*. The terrain is generally flat throughout Erie County except for the sides of several river valleys where there are some "steep slope" areas. Erie County's 13 drainage and sub-drainage basins vary in size from the Huron River Valley, which encompasses a total of some 403.4 square miles, to some relatively short miscellaneous creeks in Huron, Berlin and Vermilion Townships, which empty into Lake Erie, and only encompass a few square miles (see Plate 2). There exist some highly sensitive natural areas where many of these streams empty into Sandusky Bay (Cold Creek, Mills Creek, and Pipe Creek) and into Lake Erie (Sawmill Creek, Huron River, Old Woman's Creek, Chappell Creek and Sugar Creek). In addition to these various drainageways, there are associated lowlands, designated on Plate 3 as Floodways, which are subject to inundation on an average of once every 100 years. A sizeable amount of these Floodways are to be found in the northern two-thirds of Margaretta Township in the vicinity of Castalia, Bay View and Crystal Rock. The configuration of this floodplain land, as shown on Plate 3, outlines various fingers of land extending well into the interior from Sandusky Bay and Lake Erie, generally ranging in size from about 150 feet to 800 feet except for the Huron River Valley floodway which varies from 700 feet to over 5,000 feet. There is also to be found within Erie County an estimated total of 60 man-made ponds which encompass about 689 acres of water surface area. Included within the category of lowlying lands, described above, are a total of some 8,560 acres of wetlands which have been delineated on the series of "Existing Land Use Development" permanent wall display maps that are on file at the Erie Regional Planning Commission Office. These various wetlands constitute an extremely important natural resource within Erie County and will be described in greater detail in Chapter III. These wetlands are to be found both within the coastal zone and in the interior of the County.

* This estimate of total land area comes from the County Engineer's Office.

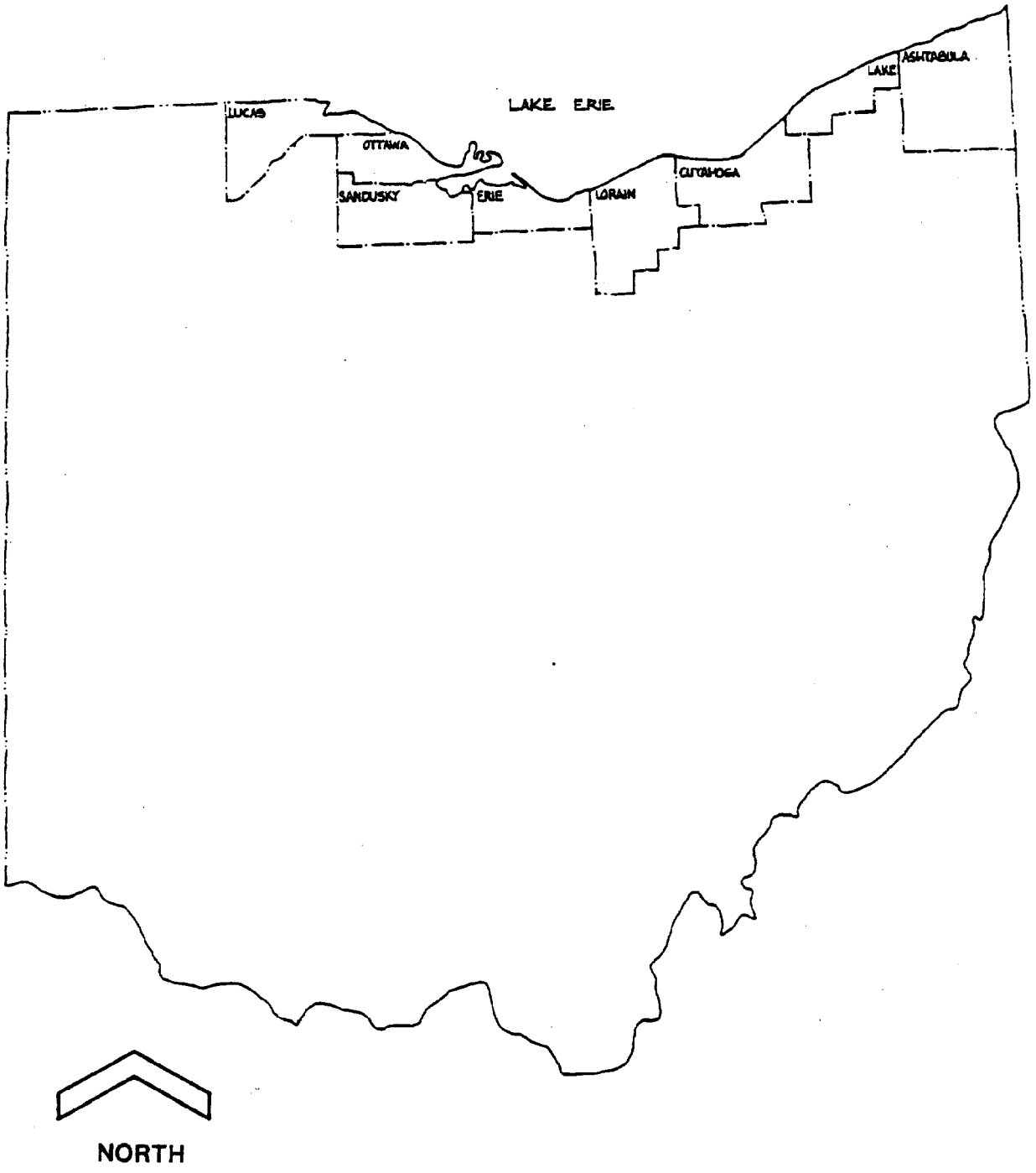

Plate 1

Ohio Coastal Counties

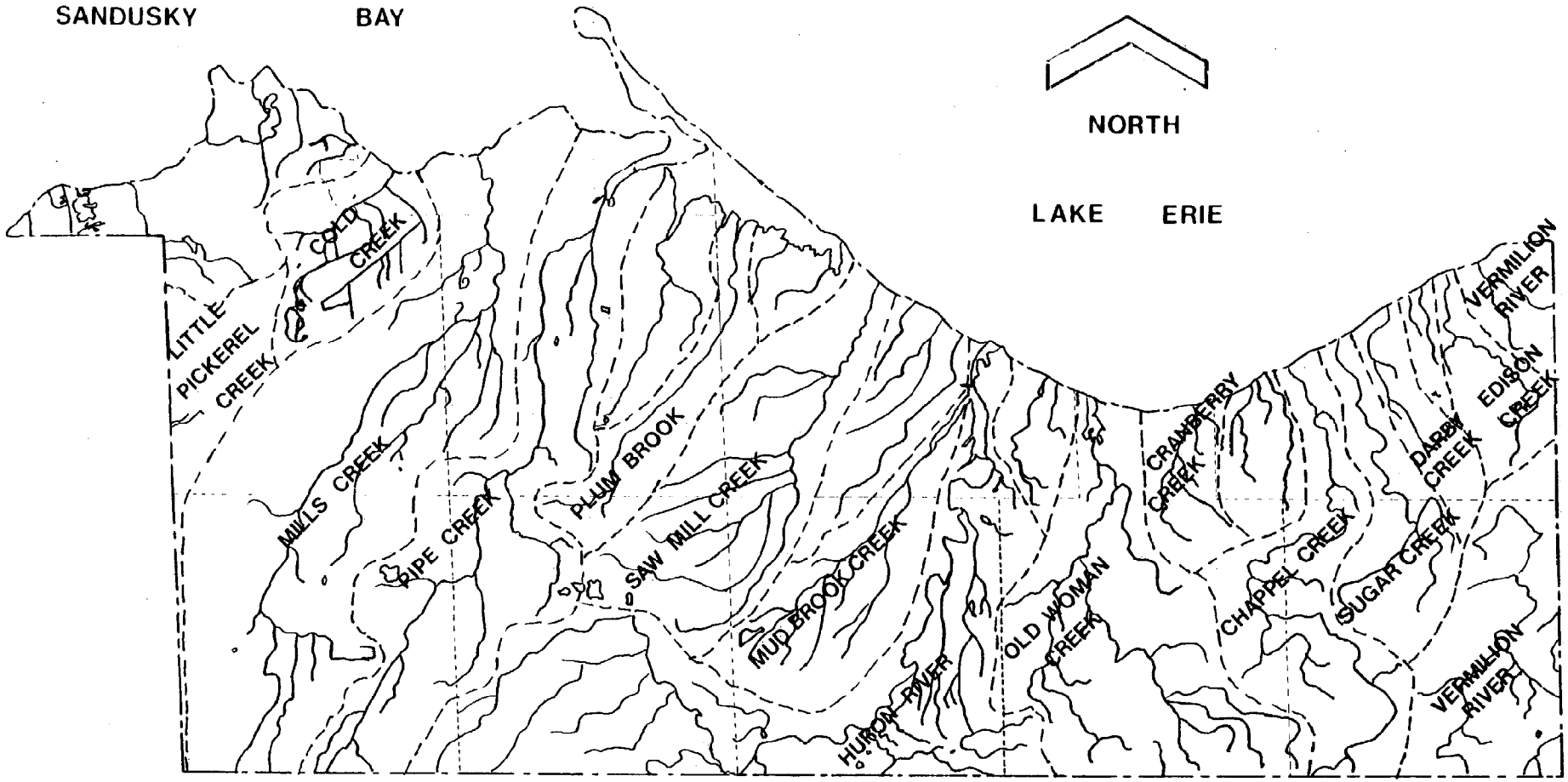

Plate 2

ERIE COUNTY, OHIO

Drainage Basins & Drainageways

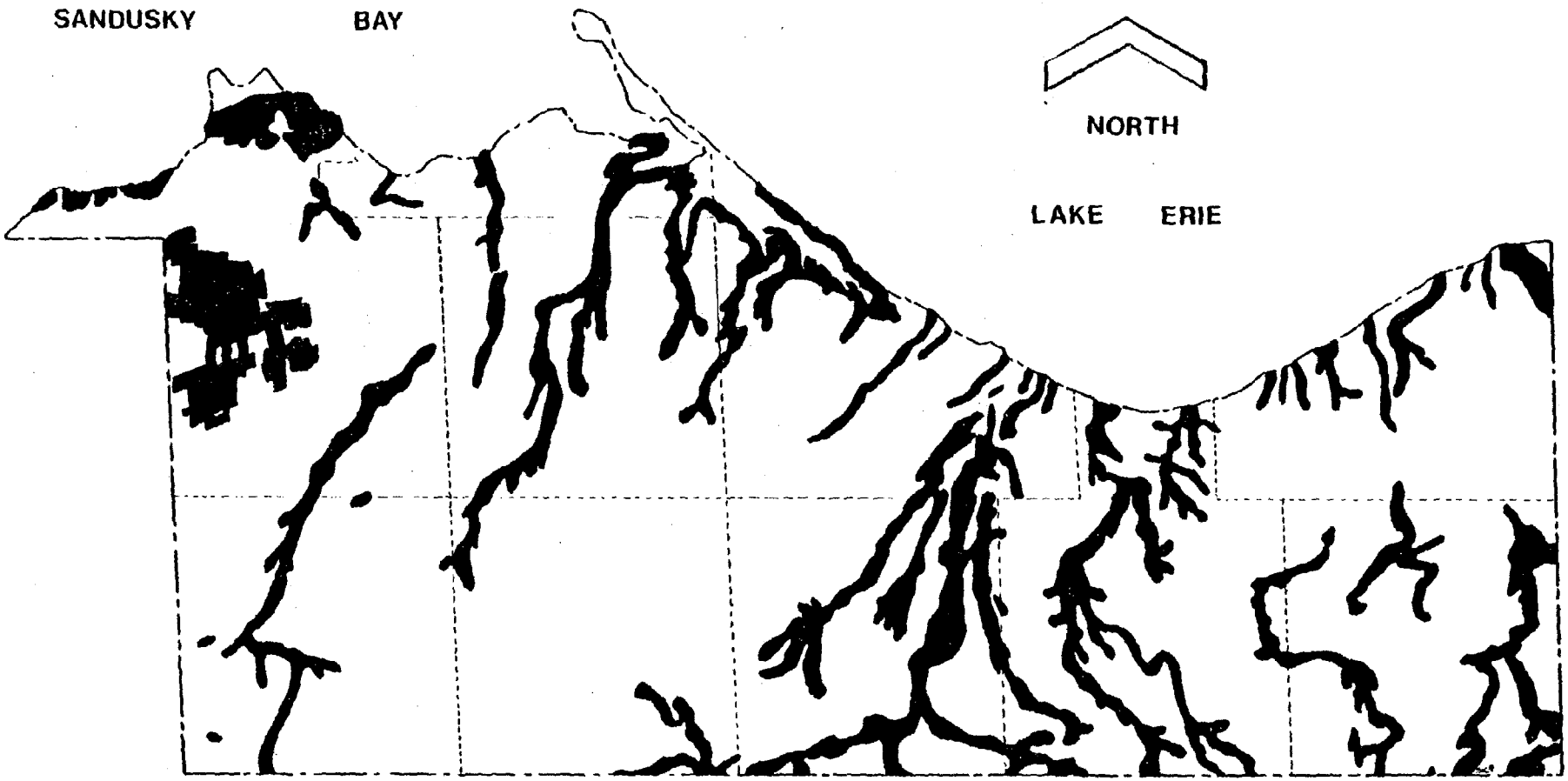

Plate 3

ERIE COUNTY, OHIO

100 Year Floodways

As illustrated on Plate 4, the County's "prime" agricultural land is concentrated largely in the middle section of Erie County, in the southwest quadrant of the County and the eastern half of the coastal lands within Erie County. The underlying bedrock is relatively close to the surface (less than 5 feet) in much of the southern half of Margaretta Township and northern half of Groton Township; several large pockets in Perkins Township and in Vermilion Township; portions of Oxford Township; throughout much of the NASA Plumbrook facility; and much smaller areas in Milan and Huron Townships and adjacent Crystal Rock (see Plate 5). These areas are not particularly suitable for certain types of heavy construction, in addition to which residential basements are generally too expensive to construct in these vicinities.

Most of the lands in the western half of Erie County are unsuitable for the installation of septic tanks because of the type soils and drainage characteristics that prevail there (see Plate 6). The northwestern quadrant of the County also contains a substantial amount of acreage unsuitable for septic tanks. This places a major constraint on where new residential construction may take place in the absence of a public wastewater collection and treatment system.

History of Planning in Erie County

Throughout the latter part of the 1960's a series of technical planning studies were undertaken by the Erie Regional Planning Commission culminating in the preparation of a document entitled Planning for Erie County: A View of 1990 and subtitled Comprehensive Development Plan for Erie Region. This report contained a comprehensive development plan which recommended a future land use pattern and a future network of major thoroughfares (highways and roads) for Erie County. Another report entitled Land Capability was also compiled by the Erie Regional Planning Commission which enumerated in detail a variety of development factors and constraints to be found within the County including geolological factors, soil conditions, water resources, mineral resources, climate, and selective information on utilities, transportation facilities and prevailing zoning practices. In addition, the Erie Regional Planning Commission mapped a Regional Plan for Wastewater Collection and Treatment which provided a coordinated framework for later activities of the County Sanitary Engineers Office.

This current planning effort represents a "next step" in the progression of Erie County's Regional Planning Program, and in effect, comprises an update of the Land Use Plan contained in the 1970 report plus more detailed Land Use Planning on an individual township-by-township basis. In addition, particular emphasis has been paid to activities within the Coastal Zone and environmentally sensitive areas regardless of their particular location and the formulation of the Land Use Planning that is to follow. Other special areas of concern have been the proposed Erie Electric Generating Station site in Berlin and Vermilion Townships, and the port activities at Huron and Sandusky.

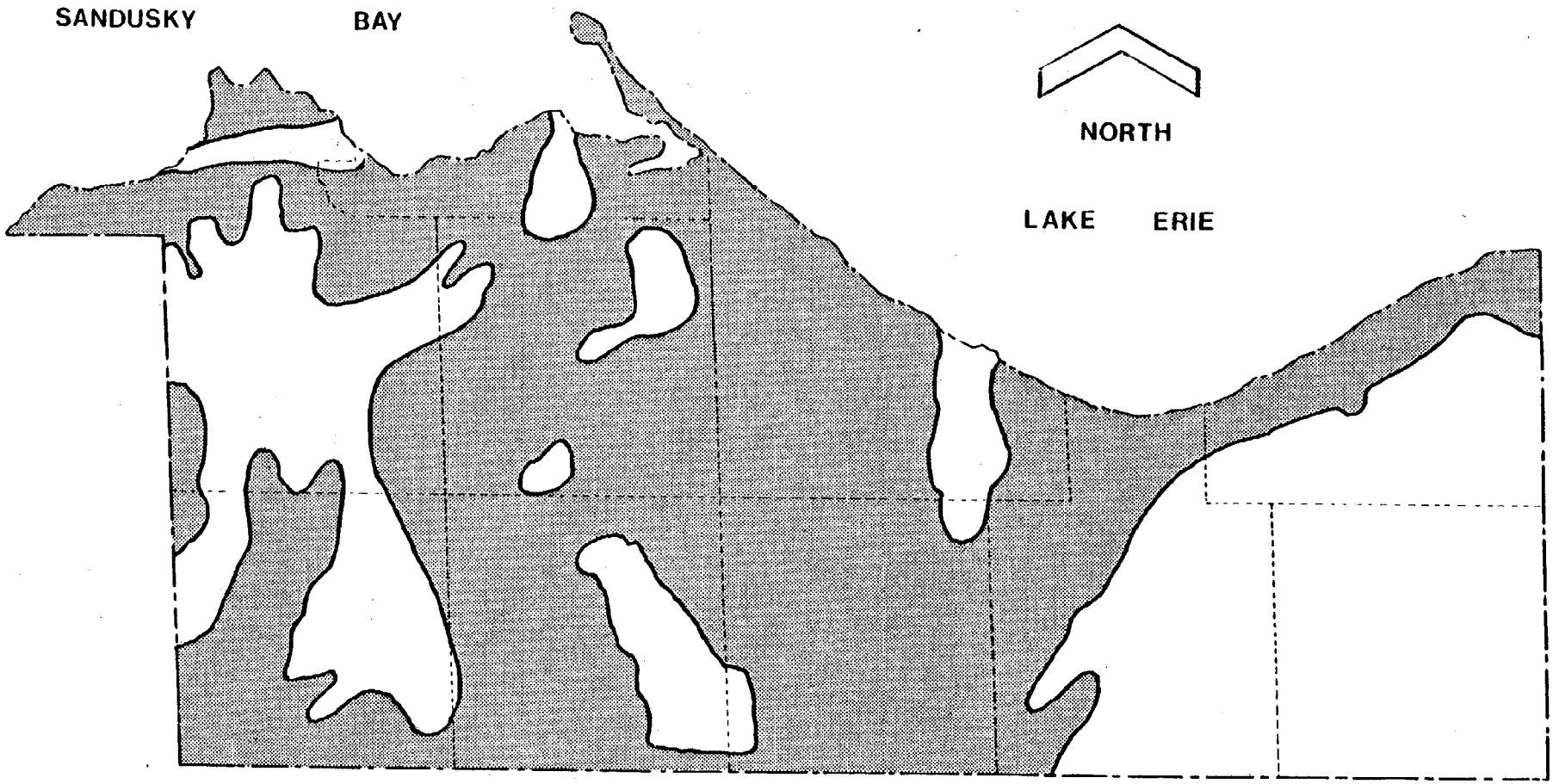

Plate 4

ERIE COUNTY, OHIO

"Prime" Agricultural Land

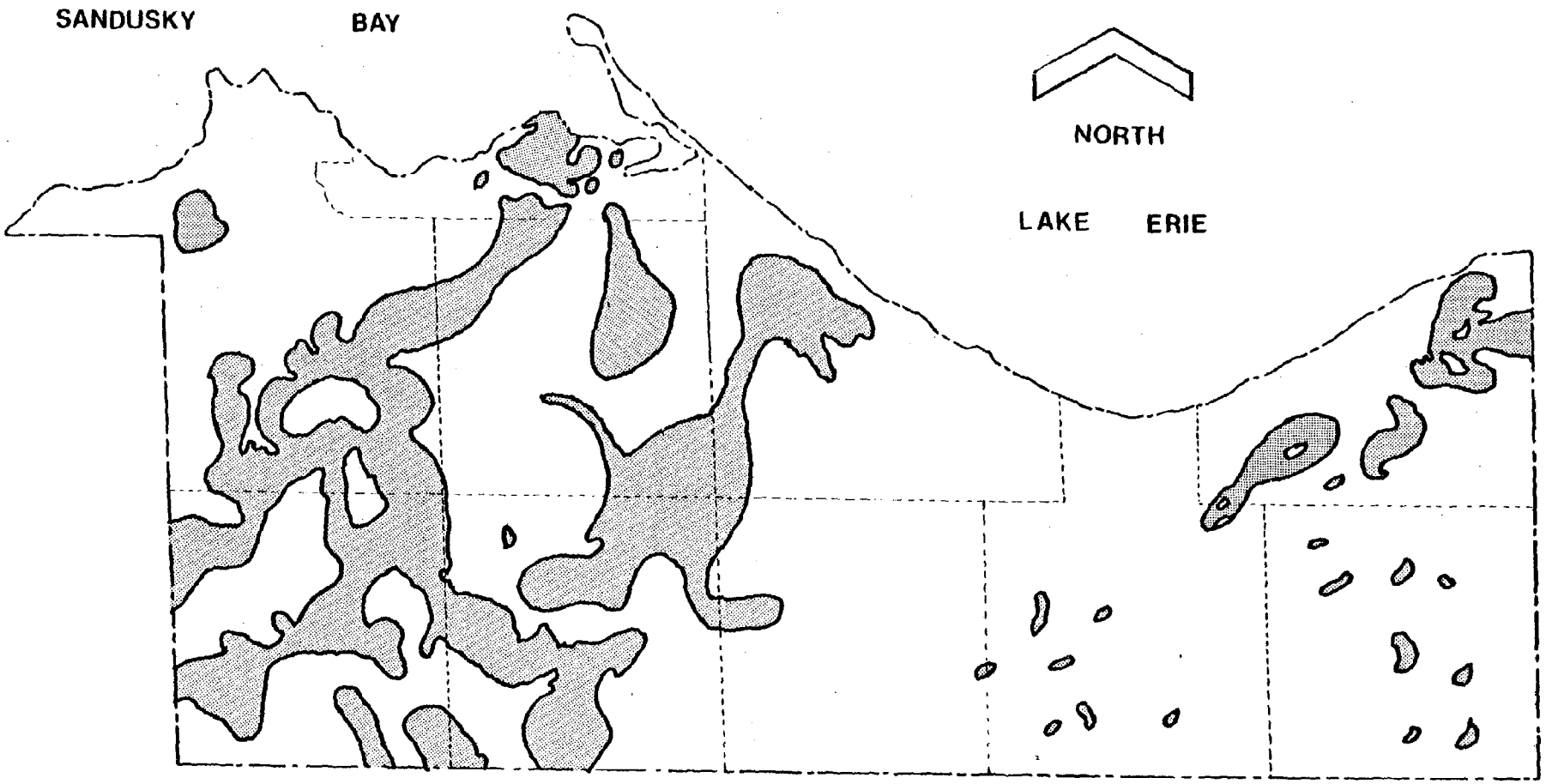

Plate 5

ERIE COUNTY, OHIO

Limited Depth to Bedrock (0-5')

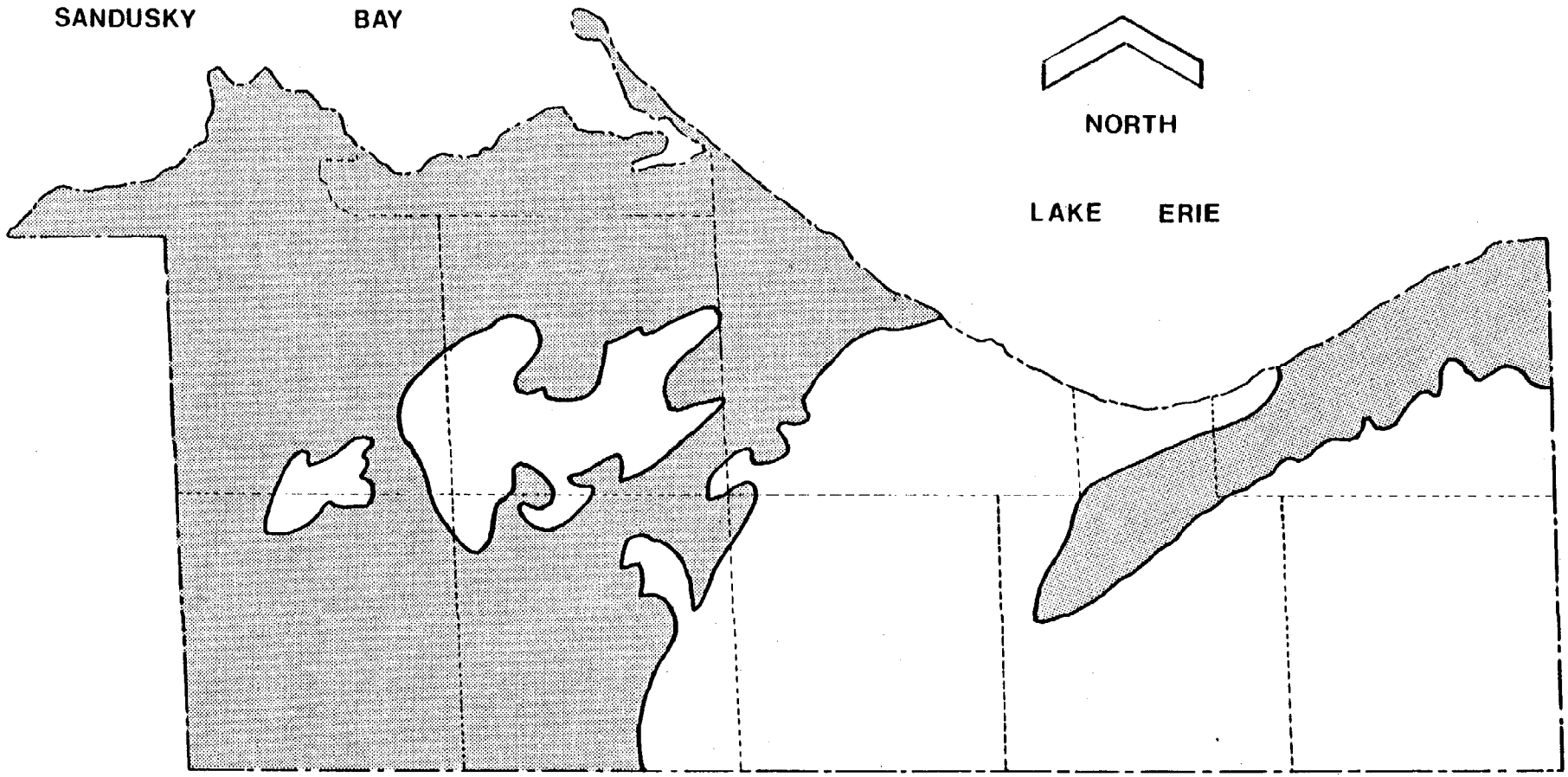

Plate 6

ERIE COUNTY, OHIO

Limitations on Septic Tank Operations

CHAPTER II

DEMOGRAPHIC AND SPATIAL ANALYSIS OF ERIE COUNTY'S POPULATION

Erie County and the Ohio Coastal Counties

As mentioned earlier in the Introductory section to this report, Erie County is one of nine coastal counties in the State of Ohio and is among the smaller ones in that group as indicated by the figures in Table 2-1. Erie County ranks seventh among the nine coastal counties with an estimated 1977 population of 76,900 persons[1]/. While Erie County's population is considerably smaller than the two metropolitan area counties (Cuyahoga and Lucas or their immediately adjacent counties - Lorain and Wood, the County's historical growth rate in percentage terms has been among the second or third highest among all of the coastal counties. Except for most decades (1970-1980) when it appears (if the Ohio DECD figures are at all accurate) that Erie County's percentage population growth rate will be lower than all of the other non-metropolitan counties in this grouping. There does exist some evidence that the so-called "impact zone" for new urban development and particularly for new population growth has already extended well into Lorain and Wood Counties and is on the verge of extending more fully into Sandusky and Erie Counties over the next several decades.

There does exist a secular trend throughout the United States and on the majority of the other continents throughout the world for an intensification of population settlement along the perimeter of the land base which would include, in the case of the United States, the Great Lakes Region, in general, and the Lake Erie shoreline in particular. Various "growth and development factors" will be enumerated later in Chapter VI, and among them are the continuing impact of the so-called energy crunch or energy crisis, and the availability of relatively cheap water transport on certain portions of the Lake Erie shoreline which should make those cites particularly attractive for certain types of economic activity which then are likely to result in related population growth within Erie County.

Erie County Townships and Municipalities

Comparisons of the historical population change/growth among Erie County Townships and Municipalities, as well as for the County as a whole, are contained in Table 2-2 and the corresponding percentage growth rate

1/ Estimated by the Ohio Department of Community and Economic Development

Table 2-1
Erie County
HISTORICAL POPULATION COMPARISONS AMONG LAKE ERIE COUNTIES
1940-1977

COUNTY	1940	1950	1960	1970	1977
Lucas	344,333	395,551	456,931	484,370	467,000
Ottawa	24,360	29,469	35,323	37,099	38,700
Sandusky	41,014	46,114	56,486	60,983	62,200
Erie	43,201	52,565	68,000	75,909	76,900
Lorain	112,390	148,162	217,500	256,843	268,000
Cuyahoga	1,217,250	1,389,532	1,647,895	1,721,300	1,559,500
Lake	50,020	75,979	148,700	197,200	209,500
Ashtabula	68,674	78,695	93,067	98,237	99,500

HISTORICAL POPULATION GROWTH RATE COMPARISONS AMONG LAKE ERIE COUNTIES
1940-1977

COUNTY	1940-1950	1950-1960	1960-1970	1970-1977
Lucas	+14.9%	+15.5%	+ 6.0%	- 3.6%
Ottawa	+21.0%	+19.9%	+ 5.0%	+ 4.3%
Sandusky	+12.4%	+22.5%	+ 8.0%	+ 2.0%
Erie	+21.7%	+29.4%	+11.6%	+ 1.3%
Lorain	+31.8%	+46.8%	+18.1%	+ 4.3%
Cuyahoga	+14.2%	+18.6%	+ 4.5%	- 9.4%
Lake	+51.9%	+95.7%	+32.6%	+ 6.2%
Ashtabula	+14.6%	+18.3%	+ 5.6%	+ 1.3%

Source: U.S. Department of Commerce, Bureau of the Census,
1940, 1950, 1960, 1970 Census of Population

Ohio Department of Community and Economic Development
1977 Ohio Population Estimates

Table 2-2
Erie County
HISTORICAL POPULATION COMPARISONS AMONG ERIE COUNTY
TOWNSHIPS AND MUNICIPALITIES
1930-1977

	ACTUAL POPULATION					ESTIMATED POPULATION	
	1930	1940	1950	1960	1970	1975	1980
ERIE COUNTY	42,133	43,201	52,565	68,000	75,909	77,921	81,665
TOWNSHIPS							
Berlin	1,767	1,806	2,153	2,691	3,050	3,104	3,190
Florence	1,062	1,102	1,278	1,648	1,576	1,650	1,730
Groton	684	586	701	899	1,122	1,140	1,160
Huron	2,324	2,697	4,117	6,358	8,641	9,387	10,250
Margaretta	2,930	2,859	3,848	6,146	5,688	5,574	6,480
Milan	1,706	1,706	2,079	2,593	3,046	3,145	3,285
Oxford	761	773	841	1,111	1,040	1,160	1,280
Perkins	3,292	3,687	4,382	8,955	10,451	11,300	13,000
Vermilion	2,347	2,547	3,467	5,439	8,446	9,330	9,720
MUNICIPALITIES							
Bay View	NI	NI	NI	802	798	798	810
Berlin Heights	569	552	613	721	828	835	850
Castalia	NI	NI	736	954	1,045	1,085	1,125
Huron	1,699	1,827	2,515	5,197	6,896	7,399	8,000
Kelleys Island	638	564	324	171	175	175	170
Milan*	678	719	846	1,076	1,297	1,310	1,340
Sandusky	24,622	24,874	29,375	31,989	32,674	31,956	31,400
Vermilion*	1,464	1,616	2,214	3,183	5,500	5,800	6,100

NI - Not Incorporated

*Portions of the Village of Milan and the City of Vermilion lie outside Erie County and are not considered in these tables.

Source: Ohio State Department, Number of Inhabitants and Miscellaneous Population Figures, 1970

Ohio Department of Economic and Community Development, 1977 Population Estimates

U.S. Department of Commerce, Bureau of the Census, Current Population Reports

Table 2-3
Erie County
HISTORICAL POPULATION GROWTH RATE COMPARISONS AMONG ERIE COUNTY TOWNSHIPS AND MUNICIPALITIES

	ACTUAL GROWTH RATE			ESTIMATED GROWTH RATE	
	1930-40	1940-50	1950-60	1960-70	1970-80
ERIE COUNTY TOTAL	+ 2.5%	+21.7%	+29.4%	+11.6%	+ 7.7%
TOWNSHIPS					
Berlin	+ 2.2%	+19.2%	+25.0%	+13.3%	+ 4.6%
Florence	+ 3.8%	+16.0%	+29.0%	- 4.4%	+ 9.8%
Groton	-14.3%	+19.6%	+28.2%	+24.8%	+ 3.4%
Huron	+16.0%	+52.7%	+54.4%	+35.9%	+18.6%
Margaretta	- 2.4%	+34.6%	+59.7%	- 7.5%	+15.1%
Milan	+ 0.0%	+21.9%	+24.7%	+17.5%	+ 7.9%
Oxford	+ 1.6%	+ 8.8%	+32.1%	- 6.4%	+23.1%
Perkins	+12.0%	+18.9%	+104.4%	+16.7%	+24.4%
Vermilion	+ 8.5%	+36.1%	+56.9%	+55.3%	+15.1%
MUNICIPALITIES					
Bay View	--	--	--	- 0.4%	+ 1.5%
Berlin Heights	- 3.0%	+11.1%	+17.6%	+14.8%	+ 2.7%
Castalia	--	--	+29.6%	+ 9.5%	+ 7.7%
Huron	+ 7.5%	+37.7%	+106.6%	+72.8%	+16.0%
Kelleys Island	-11.6%	-42.6%	-47.2%	+ 2.3%	- 2.9%
Milan	+ 6.0%	+17.7%	+27.2%	+20.5%	+ 3.3%
Sandusky	+ 1.0%	+18.1%	+ 8.9%	+ 2.1%	- 3.9%
Vermilion	+10.4%	+37.0%	+43.8%	+72.8%	+10.9%

Source: Ohio State Department, Number of Inhabitants and Miscellaneous Population Figures

comparisons are to be found within Table 2-3. These two tables show that Erie County's total population increased at a relatively rapid rate in the post-World War II "boom" period and that that growth rate declined significantly over the last two decades. The actual population figures for Erie County were 42,133 persons (1930) increasing to reach 68,000 persons for the year 1960 and then increasing only to a total of 75,909 persons in 1970 and an estimated 81,665 persons by the year 1980.

Translated into percentage growth rate terms, Erie County grew by +21.7% in the 1940-1950 decade and by +29.4% over the 1950-1960 decade; the County's growth rate declined to a +11.6% increase between 1960 and 1970 and and still further to just +7.6% estimated for the 1970-1980 decade. Part of this levelling off in a rate of growth of the County's population may be attributed to the significant decline in Erie County's rural farm population which is shown on Table 2-4; the rural farm population of the County declined from 7195 persons in the year 1940 to only 3,262 persons by 1970.

An examination of Tables 2-2 and 2-3 shows that the coastal townships and Perkins Township, immediately adjacent the City of Sandusky, have been the fastest growing townships within Erie County over the last half century (1930-1980). Huron and Perkins Townships were the fastest growing during the 1930-1940 decade; Huron, Vermilion, and Margaretta Townships grew at the most rapid rate over the 1940-1950 decade; Perkins, Margaretta, Vermilion and Huron reported the highest growth rates between 1950 and 1960; Vermilion, Huron, and Huron Townships had the highest growth rates over the 1960-1970 decade; and Perkins, Oxford and Huron Townships are estimated to have grown most rapidly over the 1970-1980 decade. What is interesting to note is that, even among the rural agricultural townships (Florence, Groton, Milan, Oxford) population growth has occurred in almost every decade with just a few exceptions between 1960 and 1970. This means that the consolidation of farm holdings and resultant loss in rural farm population has been more than offset by the emergence of rural non-farm residential construction in those rural townships.

Among the Erie County municipalities the City of Huron and the City of Vermilion have enjoyed the highest population growth rates over the last 50 years. The City of Sandusky grew at a relatively modest rate between 1930 and 1970 and it has been estimated that the City experienced a slight population decline between 1970 and 1980 because of its being a physically mature community with an aging population that is resulting in a smaller average household size. It is also interesting to note that the smaller villages have continued to grow for the most part which is a different pattern than that found in a number of Ohio counties. Bay View and Kelleys Island are special cases in that they are both surrounded either by water and/or by floodplain/wetlands that are not developable ground; Bay View has very few vacant lots remaining for new development and Kelleys Island is out in Lake Erie which represents a special problem in terms of its transportation linkage with the mainland.

Between 1930 and 1980 the respective shares of the total county population which the City of Sandusky and all of the unincorporated townships enjoyed have undergone a complete reversal (see Table 2-4); in the year 1930 the City of Sandusky's population comprised 60% of the Erie County total and the townships combined represented 40%, whereas by the year 1980 it is estimated that the City of Sandusky's population will represent about 38.7% and the combined townships some 61.3% of the total. The inland townships, which are predominantly agricultural and rural in character, have either remained about the same percentage of the total Erie County population (as in the case of Milan Township) or they have experienced a slight decline (as in the case of Berlin, Groton, and Oxford Townships). Huron and Vermilion Township have increased their respective share of the Erie County total population by the greatest amount; the population of Huron Township has increased from 5.5% of the County total (1930) to some 12.3% (estimated for 1980), and Vermilion Township's population has grown from 5.6% of the County total in 1930 to reach 12.3% (estimated for 1980). Perkins Township has also increased its proportional share of the total Erie County population from some 7.8% in 1930 to 13.3% estimated for 1980. Margaretta Township has also increased its share of the Erie County total population but at a slower rate rising from 7.0% of the County total in 1930 to 8.1% estimated for the year 1980.

It is very clear from these relative percentages that the distribution of the Erie County population is highly concentrated within the coastal cities and townships plus Perkins Township; together Margaretta, Perkins, Huron and Vermilion Townships, plus the City of Sandusky account for three-quarters of the total Erie County population (75.8%). As will be described in a later Chapter, this pattern is very likely to continue and may, in fact, even result in a greater percentage of the total County population being resident within these coastal and related lands.

Not only have the cities of Huron and Vermilion experienced significant growth in recent years, the areas of "community" expansion around those two cities and Sandusky have witnessed considerable new urban growth in general and residential development and housing in particular. The current and future provision of new utility service to certain of these more outlying areas is likely to result in an intensification of this population trend inasmuch as one of the major constraints to new population growth in many of the unincorporated portions of the coastal townships has been their general lack of utility services and that deficieicy is in the process of being remedied at several different locations.

Urban, Rural Non-Farm and Rural Farm Populations

Outlined on Table 2-5 are the relative shifts in urban and rural population of the total Erie County population betwen 1940 and 1970, and the change in character of the rural population as reflected in the shifting balance of rural farm; rural non-farm population within the unincorporated portion of Erie County. The examination of these figures reveals that the

Table 2-4
Erie County
POPULATION DISTRIBUTION AMONG ERIE COUNTY TOWNSHIPS
1930-1977

TOWNSHIP	1930	1940	1950	1960	1970	1980 (Estimated)
Berlin	4.2%	4.2%	4.1%	4.0%	4.0%	3.9%
Florence	2.5%	2.6%	2.4%	2.4%	2.1%	2.1%
Groton	1.6%	1.4%	1.3%	1.3%	1.5%	1.4%
Huron	5.5%	6.2%	7.8%	9.4%	11.4%	12.6%
Margaretta	7.0%	6.6%	7.3%	9.0%	7.5%	7.9%
Milan	4.0%	3.9%	4.0%	3.8%	4.0%	4.0%
Oxford	1.8%	1.8%	1.6%	1.6%	1.4%	1.6%
Perkins	7.8%	8.5%	8.3%	13.2%	13.8%	15.9%
Vermilion	5.6%	5.8%	6.6%	8.0%	11.1%	11.9%
TOWNSHIP TOTALS	40.0%	40.6%	43.4%	52.7%	56.8%	61.3%
CITY OF SANDUSKY*	60.0%	59.4%	56.6%	47.3%	43.2%	38.7%
ERIE COUNTY TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Also includes Village of Kelleys Island figures.

Source: Ohio State Department, Number of Inhabitants and Miscellaneous Population Figures, 1970

Ohio Department of Economic and Community Development, 1977 Population Estimates

Table 2-5
Erie County
URBAN/RURAL, RURAL NON-FARM/FARM POPULATION
1940-1970

	TOTAL POPULATION FIGURES			
	1940	1950	1960	1970
Urban Population	24,874	31,907	45,093	53,715
Rural Population	18,327	20,658	22,907	22,194
Rural Farm*	7,195	5,414	3,589	3,262
Rural Non-Farm*	11,132	15,244	19,318	18,932
TOTAL ERIE COUNTY	43,201	52,565	68,000	75,909

	PERCENTAGE DISTRIBUTION			
	1940	1950	1960	1970
Urban Population	57.6	60.7	66.3	70.8
Rural Population	42.4	39.3	33.7	29.2
Rural Farm*	39.3	26.2	15.7	14.7
Rural Non-Farm*	60.7	73.8	84.3	85.3
TOTAL ERIE COUNTY	100.0	100.0	100.0	100.0

*Rural Farm/Rural Non-Farm data are taken as subcategories of the Rural population figures.

Source: 1940, 1960, and 1970 Census of Population.

Erie County's urban population has increased from 24,874 (1940) to reach 53,715 persons by the year 1970, whereas the County's rural population has increased only 18,327 (1940) to 22,194 persons (1970). What this means in percentage terms is that the urban population of Erie County has increased from 57.6% to 70.8% over the 1940-1970 time period, and the rural population has declined from 42.4% to 29.2% over that time frame. At the same time that the total rural population has been decreasing by a substantial amount, the percentage of that rural population of residents on farms has declined from 39.3% (1940) to just 14.7% (1970), whereas the rural non-farm population has increased from 60.7% (1940), to reach 85.3% of the total by the year 1970. This means in effect that there has been a substantial de-population of the Erie County farm population over the last thirty years. At the same time, Erie County's cities and villages have been more than doubled in population and the rural non-farm population has experienced a 2.0% increase.

Natural Increase and Net Migration: 1970-1975 and 1975-1980

Outlined on Table 2-6 are the vital statistics for the Erie County population from the year 1970-71 through the year 1976-1977 which indicate that there had occurred a natural increase of 3,707 persons over that seven year time period. The later figures in the decade are not yet available so what has been done is to extrapolate from the existing data to arrive at an estimate for the 1970-1980 decade. It is estimated that the natural increase of the Erie County population over the 1970-1980 amounted to some 5,295 persons. The actual natural increase for the 1970-1975 time period amounted to +2,789 persons. The Erie County 1975 population was estimated to be 77,921 persons and the 1980 Erie County population has been estimated to be 81,665 persons. This means that during the first half of the decade (1970-1975) that the actual natural increase of +2,789 persons was greater than the estimated population increase of +2,012 persons which suggested there was a net out-migration of Erie County residents of some 777 persons. The estimated population figures and estimated natural increase for the entire decade (1970-1980), however, reveal a reverse picture in that the estimated population increase of +5,756 persons actually outnumbered the estimated natural increase of +5,295 persons suggest that there has occurred a net in-migration of some 461 persons over the decade.

Household Composition, Marital Status and Mobility Rates

An analysis of the Marital Status data (Table 2-7) show that an increasing percentage of the total County population consists of single persons and divorced persons, whereas the number of married persons has declined somewhat. This is in line with the general trends to be found for the State of Ohio as well and reflect the trend toward different type family structure within the overall population.

Table 2-6
Erie County
VITAL STATISTICS AND NATURAL INCREASE - ERIE COUNTY:
1970-1977

YEAR	BIRTHS	DEATHS	NATURAL INCREASE
1970-71	1,849	859	+990
1971-72	1,397	760	+637
1972-73	1,217	727	+490
1973-74	1,145	751	+394
1974-75	1,002	724	+278
1975-76	1,122	699	+423
1976-77	1,122	627	+495
TOTALS	8,854	5,147	+3,707

NOTE: The statistical year on which these figures are based beings and ends each July 1.

Source: Ohio Department of Economic and Community Development, Ohio Population Estimates, 1971-1977

Table 2-7
Erie County
MARITAL STATUS/FERTILITY RATE OF THE LOCAL AREA POPULATION
1960-1970

PLACE/YEAR	MALES - 14 YEARS AND OVER				FEMALES - 14 YEARS AND OVER				
	PERCENT SINGLE	PERCENT MARRIED	PERCENT DIVORCED	PERCENT WIDOWED	PERCENT SINGLE	PERCENT MARRIED	PERCENT DIVORCED	PERCENT WIDOWED	FERTILITY RATE**
SANDUSKY									
1960	21.4%	71.1%	3.2%	4.3%	18.7%	63.6%	4.1%	16.6%	1707
1970	25.2%	67.6%	3.4%	3.8%	22.2%	58.0%	5.2%	14.6%	NA
% Change*	+16.4%	-4.1%	+8.1%	-11.8%	+26.5%	-2.8%	+35.5%	+13.7%	
ERIE COUNTY									
1960	22.6%	69.8%	3.4%	4.2%	17.6%	67.8%	3.1%	11.6%	1882
1970	25.0%	68.3%	3.4%	3.3%	21.2%	63.7%	3.6%	11.5%	NA
% Change	+23.9%	+9.2%	+11.9%	-12.5%	+42.4%	+10.9%	+37.8%	+17.4%	
STATE OF OHIO									
1960	22.7%	71.1%	2.4%	3.8%	18.4%	66.7%	3.3%	11.7%	1761
1970	27.2%	65.7%	3.0%	3.0%	22.5%	59.8%	4.3%	11.8%	1195
% Change	+35.3%	+4.4%	+37.5%	-10.5%	+42.6%	+3.9%	+52.6%	+17.9%	-32.1%

*Percent change based on the absolute numerical figures available for each census year.

**Number of children ever born per 1,000 women aged 15-44.

Source: U.S. Department of Commerce, Bureau of the Census, General Social and Economic Characteristics - Ohio, 1960, 1970.

Table 2-8
Erie County
AVERAGE HOUSEHOLD SIZE AND DEGREE OF OVERCROWDING
1960-70

	POPULATION IN HOUSING UNITS					PERSONS PER ROOM		
			PER OCCUPIED UNIT					
	TOTAL	OCCUPIED UNITS	TOTAL	OWNER-OCCUPIED	RENTER-OCCUPIED	.5 OR LESS (PERCENT)	.51 TO 1.00 (PERCENT)	1.01 OR MORE (PERCENT)
SANDUSKY								
1960	31,360	10,223	3.1	3.2	2.9	51.74%	40.43%	7.83%
1970	52,339	10,867	3.0	3.2	2.7	55.80%	37.63%	6.57%
% CHANGE*	+3.12%	+6.29%	-3.3%	0.0%	-6.9%	+14.65%	-1.06%	-10.86%
ERIE COUNTY								
1960	66,401	20,046	3.3	3.4	3.2	90.95%		9.07%
1970	74,414	23,022	3.2	3.4	2.8	93.25%		6.75%
% CHANGE	+12.07%	+14.85%	-3.03%	0.0%	-12.50%	+17.77%		-14.52%
STATE OF OHIO								
1960	9,532,612	2,852,557	3.3	3.4	3.1	44.52%	45.98%	9.49%
1970	10,406,584	3,289,432	3.2	3.4	2.7	51.66%	41.78%	6.56%
% CHANGE	+9.17%	+15.31%	-3.03%	0.0%	-12.90%	+33.79%	+4.78%	-20.30%

*Percent change based on the absolute numerical figures available for each census year.

Source: U.S. Department of Commerce: Bureau of the Census: General Housing Characteristics - Ohio, 1960, 1970

Table 2-9
Erie County
MOBILITY AND COMMUTING CHARACTERISTICS OF THE POPULATION
1960-1970

GEOGRAPHIC LOCATION/ YEAR	PLACE-OF-RESIDENCE						PLACE-OF-WORK		
	TOTAL POPULATION 5 YRS. & OVER	SAME HOUSE(%)	DIFFERENT HOUSE IN U.S.A. SAME CO.(%)	DIFF.CO.(%)	SAME STATE(%)	DIFF.STATE(%)	TOTAL: ALL WORKERS	WORKED IN COUNTY OF RESIDENCE(%)	WORKED OUTSIDE COUNTY OF RESIDENCE(%)
SANDUSKY									
1960	28,335	56.1%	30.0%	11.8%	6.2%	5.7%	11,658	91.9%	4.3%
1970	29,728	59.4%	28.0%	9.4%	4.9%	4.5%	12,849	88.5%	4.9%
% Change*	+ 4.9%	+10.9%	-2.1%	-16.9%	-17.3%	-16.5%	+10.2%	+ 6.2%	+26.4%
ERIE COUNTY									
1960	39,653	52.2%	28.9%	16.8%	9.4%	7.4%	23,159	84.6%	11.3%
1970	69,101	57.5%	23.6%	15.4%	9.1%	6.3%	28,471	79.8%	13.8%
% Change	+15.8%	+27.6%	-5.6%	+6.3%	+11.4%	-0.1%	+22.9%	+15.9%	+50.1%
STATE OF OHIO									
1960	8,567,666	49.9%	34.1%	14.0%	7.3%	6.7%	3,437,799	85.1%	11.3%
1970	9,731,746	54.8%	26.0%	13.6%	7.3%	6.3%	3,965,913	78.1%	15.6%
% Change	+13.6%	+24.8%	-13.3%	+10.0%	+12.7%	+7.1%	+15.4%	+5.9%	+59.7%

*Percent change based on the absolute numerical figures available for each census year.

Source: U.S. Department of Commerce: Bureau of the Census, General Social and Economic Characteristics - Ohio, 1960, 1970

The average household size is estimated to have declined from 3.3 persons per household in 1960 to 3.1 persons per household by 1970, and it is estimated that this average household size will continue to decline over the next ten to twenty year time period. This is line with the general trend throughout the State of Ohio and, in fact, throughout the nation (see Table 2-8). It is estimated that Erie County's average household size will range between 2.7 and 2.8 persons by the year 2000.

Between 1960 and 1970 the mobility rate of Erie County residents declined a little bit in that 57.5% of the total population five years of age and over had remained in the same house over the preceding decade as opposed to 52.2% in that same category in the year 1960 (Table 2-9). Of the remaining 42.5%, 23.6% relocated within Erie County; another 5.4% relocated to another county within the State of Ohio, and the remaining 3.5% either were not counted or moved out of the county. The data on place-of work reveal that a slightly smaller percentage of Erie County residents worked within the County in 1970 as compared with 1960 (79.8% versus 84.6%.

CHAPTER III

LOCAL AREA ENVIRONMENTAL CONSTRAINTS AND DEVELOPMENT FACTORS

Overview of Shoreline and Coastal Zone

Erie County's 35 miles of Lake Erie shoreline are without a doubt the County's most important physical feature. Wetlands and other natural areas along the coast support large and varied wildlife populations. Sand, gravel and gypsum are abundant in the coastal area. Proximity to the vast Appalachian coalfields and Midwestern grain centers has made Sandusky a major port facility in the Great Lakes System. The County economy is given a healthy yearly boost as tens of thousands of vacationers flock to American's "fourth seacoast" to enjoy Lake Erie's waters and beaches and the area's many recreational attractions.

The Lake Erie shoreline is experiencing considerable and continuous physical change. Erosion of the land along the coast has become a serious problem, washing away nearly 800,000 cubic meters of earth yearly along Ohio's northern border. Longshore, or littoral currents are one of the prime causes of the erosion process. Generally moving in a westward direction, sand is eroded from the eastern segments of Erie County's shoreline and deposited to the west and northwest. Cedar Point, a result of this process, is the largest sand deposit along the Ohio shoreline, gaining approximately five feet of land per year. In efforts to control littoral drifts, breakwaters, jetties, groins, and seawalls have been constructed along the shoreline. While these structures do control some drifting and protect against wave action, their placement can also cause problems. Sediment which normally would be deposited west of the individual structures is piled up to the east. Areas behind (west) of the structures are still eroded, with the end result being that the areas behind the structures are often stripped down to shale or gravel. In response to these and other coastal problems, the Ohio Coastal Zone Management Program (OCZMP) was initiated to provide a comprehensive solution arrangement. The OCZMP has begin to develop programs aimed at preserving, developing, and enhancing the resources of Ohio's coastal area and achieving the wise use of coastal lands and waters by both the public and private sectors.

Most of the shoreline of Erie County is relatively stable having recession rates of less than 3 feet per year. Five areas of the shoreline between Whites Landing and the State Route 2 bridge over Sandusky Bay are retreating at rapid (5-7 ft./yr.), very rapid (7-9 ft./yr.). and extremely rapid (9-11 ft./yr. or greater) rates (ODNR, Division of Geological Survey 1980 in preparation).

The area of greatest recession in the County is located along the south part of the Cedar Point Sandspit between the Cedar Point Chaussee Bridge and the mouth of Sawmill Creek. This sandspit has been breached since 1973 (or earlier) near the Chaussee Bridge, and is receding at very rapid to extremely rapid rates southeast of the breached area (ODNR, Division of Geological Survey 1980 in preparation).

Drainageways and Associated Floodplain Lands

Erie County has thirteen distinct watersheds which carry surface water to Lake Erie (see Plate 2 and Table 3-1). Of these, the Huron River and Vermilion River are the longest, both being almost 60 miles in length, and they serve the largest drainage areas, 403.4 and 271.7 square miles respectively. The other drainage basins are relatively small ranging in size from Cold Creek (5.1 square miles) to Mills Creek (42.4 square miles). Lack of slope combined with shallow, clayey soils results in poorly drained wetlands, usually occurring relatively close to the Lake Erie shoreline.

Flooding of any consequence is generally limited to the Huron and Vermilion River basins. Flooding is sporadic, often caused by ice jams which back water up into the narrow valleys. Flooding throughout the rest f the county is minimal, owing to the flat topography and the deep entrenchment of the streams. The floodways are delineated on Plate 3 and generally consist of finger-shaped extensions into the interior lands from the Sandusky Bay and Lake Erie shorelines. Water area, apart from Lake Erie, accounts for 689 acres in Erie County. There are approximately 60 man-made ponds, mostly for agricultural purposes, and no lakes. The above described rivers and creeks represent the bulk of the water area in Erie County.

Location of "Steep Slope" Areas

Steep slopes are not a significant development factor throughout most of the County. Some 94.6% of Erie County's land base has a slope of less than six (6) percent, and nearly 97% of the land has s slope of less than twelve (12) percent. Practically all of the land steeper than twelve (12) percent is found along the valley edges of the Huron and Vermilion Rivers and their major tributary streams. These river valleys do add variety to the County's predominantly flat landscape and they are quite scenic especially where major tree cover is concentrated along these drainageways. Gently rolling land is to be found in parts of the southern and eastern sections of the County - in Florence, Berlin, Milan, and Huron Townships. The remainder of the County consists primarily of level ground.

Table 3-1
Erie County
LENGTHS AND DRAINAGE AREAS OF MAJOR ERIE COUNTY STREAMS

STREAM	STREAM LENGTH (MILES)	DRAINAGE AREA (SQ. MILES)
Cold Creek	5.5	5.1
Mills Creek	13.2	42.4
Pipe Creek	12.0	28.6
Sawmill Creek	22.3*	13.8
Huron River	59.7	403.4
Old Woman Creek	19.5*	26.6
Chappel Creek	10.2	24.0
Vermilion River	58.7	271.7

*Includes only the Erie County portion of the stream.

Source: Ohio Department of Natural Resources, Gazetteer of Ohio Streams, 1954

Ohio Department of Natural Resources, Drainage Areas of Ohio Streams: Supplement to Gazetteer of Ohio Streams, 1967

Configuration of Major Tree Cover/Vegetation and Wildlife

Erie County's original vegetation was divided into seven categories: beech forest, mixed oak forest, oak and sugar maple forests, elm-ash swamp forests, mixed mesophytic forests, prairie grasslands, and freshwater marshes and fens (Gordon 1966, 1969) . These classifications are somewhat artificial because the Erie County vegetation existed as a continuum, yet they are helpful for purposes of analysis. Today most of the original natural vegetation has disappeared, largely because of land clearing activities to make possible either agricultural cultivation or new urban development. It is still possible to find large areas of tree cover, especially in the eastern portion of Erie County where the more varied topography and slightly poorer quality soils have limited the extent of urban development. The Huron and Vermilion River Valleys are among the most densely covered areas within the entire County.

Relatively good-sized areas of natural vegetation cover may also be found throughout scattered portions of Huron, Milan, Berlin, Vermilion, and Florence Townships. These areas were originally of the mixed oak, beech, and mixed mesophytic forests. Trees predominating in these virgin forests were several varieties of oaks, hickories, beech, and maples with scattered examples of basswood, hemlock, and black cherry. In addition, fairly sizeable concentrations of marsh and swamp-type vegetation can be found in the wetland areas of the County. Agriculture occupies the largest single amount of land within the County and it is usually only possible to find small, scattered stands of natural vegetation, often occurring in narrow bands along stream channels or fence rows.

Because of the original diversity of vegetative communities that occurred in Erie County, a corresponding diversity of remnant communities remain. Many of the larger areas still extant are in areas difficult to develop, such as low-lying floodplains or other areas with poorly drained soils. Forest and wetland communities have suffered greatest losses, and as a result of this, many of the species declining in abundance in the State are occupants of such communities. Recent research on species diversity of birds and mammals in different size forested areas has been conducted (Forman, et al. 1976, Galli et al. 1976, Whitcomb et al. 1976, Whitcomb 1977).

The relationship between the above and the spatial isolation of smaller "islands" of forest habitat indicates that some species may require maintenance of large tracts of forest as well as possibly smaller ones for long-term survival. This principle, first discovered in studies of oceanic islands, apparently applies as well to terrestrial forest communities surrounded by "seas" of cropland or urbanized land. Increased fragmentation and isolation by new urban development may also cause a corresponding effect on other natural areas, such as wetlands. Such effects might be mitigated by ensuring that corridors for dispersal of plants and animals that interconnect such areas are maintained. The decline in

species diversity and populations of species with special habitat requirements might not be detected or proven easily because of a lack of adequate previous baseline information with which to compare future and present information.

Among the goals and objectives stated in Chapter VI is the preservation of wetlands and other unique natural areas within Erie County. Establishment of a policy of altering areas designated as parks or open space as little as possible from their present state, or by enhancing portions of them, such as by rehabilitating wetlands or allowing wooded areas to regenerate naturally will aid in mitigating potential losses. Ecological investigation of areas where developments are proposed should be required prior to development, and followed by preservation of important communities wherever possible.

"Prime" Agricultural Land

Erie County has over 300 separate soil types which can be grouped into twelve general soil associations:

1. Toledo-Fulton Association - Deep, nearly level, very poorly drained to somewhat poorly drained soils that have a subsoil of clay or silty clay: on old lakebeds.

2. Del Rey-Lenawee Association - Deep, nearly level, somewhat poorly drained to very poorly drained soils that have a subsoil of silt loam to silty clay loam: on old lakebeds.

3. Kibbie-Tuscola-Colwood Association - Deep, level to gently sloping, moderately well-drained to very poorly drained soils that have a subsoils of silt loam to silty clay loam: on uplands.

4. Sisson-Tuscola Association - Deep, nearly level to very steep, well-drained to moderately well-drained soils that have a subsoil of silt loam to silty clay loam: on uplands.

5. Arkport-Galen Association - Deep, nearly level to moderately sloping, well-drained to moderately well-drained soils that have a subsoil of loamy fine sand and fine sand: on hills and ridges.

6. Perwamo-Bennington Association - Deep, nearly level, very poorly drained soils that have a subsoil of clay loam to light clay: on uplands.

7. Warners Association - Deep, level, very poorly drained soils that are underlain by marl or clay.

8. Allis-Fries Association - Shallow to moderately deep, nearly level to gently sloping, very poorly drained to somewhat poorly drained soils that have a subsoil of silty clay or clay: on uplands.

9. Mahoning-Bogart-Haskins-Jimtown Association -Deep, nearly level to gently sloping, somewhat poorly drained to moderately well-drained soils that have a subsoil of sandy loam to clay: on uplands, terraces, and beach ridges.

10. Lewisburg, moderately shallow variant - Castalia-Millsdale Association - Level to moderately sloping, well-drained to very poorly drained soils that are shallow to limestone rubble and soils that are moderately deep to bedrock: Subsoil of clay loam or silty clay loam: on uplands.

11. Marsh and Beaches Association - Level marsh and well-drained beaches adjacent to Lake Erie.

12. Prout Association - Moderately deep to deep, nearly level to gently sloping, somewhat poorly drained soils that have a subsoil of heavy silt loam to silty clay loam: on uplands.

Of these twelve soils classifications, the first six and the twelfth can be rated as "prime" agricultural soils based on their capacities to support high-yield crop production (see Plate 4, "Prime" Agricultural Land).

The central and southwestern portions of the County are the areas with the greatest concentrations of "prime" agricultural lands (Plate 4). Perkins, Groton, and Huron Townships are largely "prime" agricultural land, while practically all of Oxford and Milan Townships fall into that category. Margaretta, Berlin, and Vermilion Townships all have significant amounts of "prime" agricultural land as well. Florence Township is the only township in Erie County without any "prime" agricultural land. A detailed mapping and analysis of all the Erie County soils is contained within two earlier planning reports prepared by the Erie Regional Planning Commission - the 1970 Comprehensive Development Plan for Erie Region and the Land Capability Report.

Geology - Areas Underlain with Bedrock

Most of the land base that falls within Erie County is the result of deposits left by large inland seas some 300-350 million years ago. Through pressures generated by layers of sediment and the weight of the water itself, layers of sedimentary rock were formed. This sedimentary limestone, dolomite, shale, and sandstone today forms the bedrock beneath Erie County's surface. The glacial periods of one to two million years ago shaped many of the major surface features found today and brought in

valuable topsoil from the north. Lake Erie was formed in the basin left behind as the glaciers retreated. However, the ice advanced several times, each advance oaffecting the size and surface elevation of the lake. During this period, Lake Erie experienced at least five distinct lake level stages. Several of these stages were higher than the lake's present stage, depositing more rich topsoil on the region. The beach ridges found throughout the County, especially in Berlin and Vermilion Townships, make up the shorelines of the various lake levels (see the Land Capability Report).

As a result of this geological history, there are two major development factors to be considered in Erie County - depth to bedrock and types of bedrock. About one-fifth of the County's land base (21%) consists of lands where bedrock lies within five feet of the surface (see Plate 5). The shallow soil depths were caused by the relatively short stays of the glacial lakes. The western portions of the County - Margaretta, Perkins, Oxford, and Groton Townships - are the most seriously affected by this problem. Type of bedrock directly affects sewage disposal, just as depth to bedrock does. Even if the soils are deep enough in a particular location to allow septic tank disposal, the effluent often cannot pass through this bedrock. It then ponds above the bedrock, saturating the soil and contaminating the groundwater supply. For precisely these reasons, over 70% of Erie County's soils are not conducive to septic tank operations (see Plate 6). In addition, the type and depth of the bedrock affects developer's ability to construct house basements and/or certain other types of foundations for commercial and industrial structures.

Coastal/Inland Wetlands and Waterfowl Habitat

Approximately 15,000 acres of coastal wetlands remain in Ohio, less than one-half of what existed in 1955. The loss is attributed to agricultural expansion and general development (ODNR 1979 Draft Report). Although approximately 10,000 acres of wetlands are currently managed by private clubs, the State of Ohio, and the U.S. Department of Interior, the remaining several thousand acres of wetlands are not protected from development. These unprotected areas exist as two basic types: those that still retain their wetland character; and those that have been converted to marginally productive farmland, but could be returned to a wetlands state through proper management (ODNR 1979 Draft Report).

Approximately 8,560 acres of 'wetlands' still remain in Erie County - mainly within the coastal zone, but also smaller areas scattered at numerous locations throughout the County (described as 8,560 acres of 'marshland', Scruggs and Hammond Inc. 1973).

Wetlands fulfill a variety of important functions, including habitat for waterfowl and other wildlife (including rare and endangered species), spawning and nursery habitats for sport and commercial species of fish; by trapping nutrients and sediment, hence protecting water quality in Lake Erie; by acting as buffers against damaging floods, and by providing reservoirs of the natural environment to be used as a source of education and enjoyment by residents of and visitors to the area (ODNR 1979 Draft Report).

There are four wetlands inventory studies either in process or recently completed that include Erie County, Ohio. Two of these studies are being conducted under the auspices of the U.S. Fish and Wildlife Service, and the other two are under the auspices of ODNR, Division of Water, Coastal Zone Management Section.

Coastal Wetlands are briefly described and mapped in the 1979 public review draft of "Ohio Coastal Zone Management Program" by the Ohio Department of Natural Resources (ODNR), Division of Water, Coastal Zone Management Section. Special Management Areas are proposed in this 1979 public review draft: Areas of Particular Concern (hereinafter abbreviated as APC), and Areas for Preservation and Restoration (hereinafter abbreviated as APR). Wetlands are designated as generic (as opposed to site-specific) APR's. Two wetland areas have been proposed as "Site-specific Special Management Areas": Sheldon's Marsh (formerly Wildlife Realty Marshes and Sheldon's Folly) recently purchased by ODNR located on the lee side of Cedar Point between Huron and Sandusky, and designated as an APR; and Old Woman Creek National Estuarine Sanctuary, located east of Huron, designated as an APC.

The Coastal Zone Management (CZM) Section of the ODNR is in the process of completing an inventory of coastal wetlands in Ohio. This inventory was derived from examination of aerial photos taken during the Spring of 1978. A second series of air photos were taken during October of 1979, but the information is not yet available. Wetlands mapped from the Spring 1978 aerial photos are delineated in the permanent wall display maps for the individual townships. When the October 1979 information becomes available, it should be incorporated into any wetlands maps of Erie County, as Ted Walton of the CZM Section of ODNR stated that the extent of wetlands during October 1979 was greater than that of the Spring 1978 due to time of year and lake level variations (letter dated December 28, 1979).

Another wetlands inventory in process is being conducted under the auspices of the U.S. Fish an Wildlife Services National Wetlands Inventory, based in St. Petersburg, Florida. Ths inventory is also based on interpretation of recent aerial photographs, and is not restricted to the coastal zone of Ohio. Unfortunately, the Erie County area of Ohio has not yet been mapped and is unavailable at this time.

Finally, under the auspices of the U.S. Fish and Wildlife Service, the Ohio State University, Center for Lake Erie Area Research and Indiana University, Environmental Systems Application Center (OSU, CLEAR and IU, ESAC) have completed a draft (1979) report entitled "A Summary of Knowledge of the Fish and Wildlife Resources of the Coastal Wetlands of the Great Lakes of the United States, Volume Three: Lake Erie". This is being prepared for the U.S. Fish and Wildlife Service, Division of Ecological Services - Region 3, Twin Cities Minnesota, and will be publicly available on completion. The locations and extents of coastal wetlands identified in this draft report on Lake Erie Wetlands were derived from U.S.G.S. Quadrangle maps, and confirmed during an aerial survey of the coastline.

Hence, all wetlands shown on the permanent wall display maps as located outside of the coastal zone are based on information from appropriate Quadrangle maps, and the studies discribed above. Their accuracy is therefore less than complete.

Definitions of Terms

The words lacustrine and palustrine are used to describe coastal wetland types in the report by OSU, CLEAR and IU, ESAC (1979 Draft), and are also used in the same manner in this report. These terms are defined below, as they are defined by Cowardin et al. (1979 Operational Draft, p. 19-22).

Lacustrine - "The Lacustrine System...includes wetlands and deep-water habitats with all of the following characteristics: 1) situated in a topographic despression or dammed river channel; 2) lacking trees, shrubs, persistent emergents, nonaquatic mosses or lichens with greater than 30 percent areal coverage; and 3) greater than 8 hectares (ha) (20 acres) in size. Similar wetlands and deep-water habitats smaller than 8 (ha) are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature forms all or part of the boundary, or if the water depth in the deepest part of the basin is greater than 2 meters (m) at low water." This system includes permanent lakes and reservoirs, intermittent lakes, and typically contains extensive deep-water areas and exhibits considerable wave action. These areas may be tidal, but ocean-derived salinity must be less than 0.5%o. Palustrine wetland islands (see below) can occur within Lacustrine systems (Cowardin et al. 1979 Operational Draft, p. 19-20).

Palustrine - "The Palustrine System...includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, nonaquatic mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%o. It also includes wetlands lacking such vegetation, but with all of the following characteristics: 1) size less than 8 hectares; 2) absence of an active wave-form or bedrock shoreline feature; 3) water depth in the deepest part of basin less than 2 m at low water; and 4) salinity due to ocean-derived salts less than 0.5%o." This system includes vegetated wetlands such as marshes, bogs, fens, prairies, and ponds that are small, shallow, and either permanent or intermittent.

Coastal Wetlands

Eighteen (18) separate wetlands comprising ten (10) wetland areas described below, have been identified and described by OSU, CLEAR and IU, ESAC (1979 Draft Report) along Erie County's Coastal Zone. The locations of these coastal wetlands are shown on the permanent wall display maps and are briefly described later in this section. Because their report is in a draft stage, it is possible that other coastal wetlands may be identified and described; and all of these coastal wetlands will be available in the final report.

These ten wetlands are listed and briefly described below, running from east to west along Erie County's coast. The information below was summarized from OSU, CLEAR and IU, ESAC 1979 Draft, and information provided by the ODNR, Division of Natural Areas and Preserves, in letters dated July 20, 1979 and January 15, 1980, with one exception. The "Mill Creek Wetland" description is derived from information obtained during a brief (4 hours) reconnaissance of this wetland by a biologist from Woolpert Consultants on October 4, 1979.

Old Woman Creek National Estuarine Sanctuary

This 158 acre wetland was designated as the first National Estuarine Sanctuary on the Great Lakes by the Office of Coastal Zone Management, the National Oceanic and Atmospheric Administration (NOAA), and the ODNR in 1977. This area is located in Berlin and Huron Townships.

This wetland occupies the lower estuarine portion (1.3 miles) of Old Woman Creek, and is separated from Lake Erie by a narrow barrier beach at the stream mouth. The maximum width of the wetland is 0.4 miles, and the elevation is at or near that of Lake Erie (571 ft. ASL).

Old Woman Creek has a relatively small drainage area of 26 square miles, and carries a heavy silt load from agricultural runoff. Higher lake levels during the early 1970's have flooded about 75 acres of former marshy low lying wetlands in the sanctuary. Habitat type identified include open water, shoreline, remnant embayment marshes, and mud flats.

Open water habitats are dominated by American Lotus (Nelumbo lutea) and Arrow Arum (Peltandra virginia) although neither species is abundant.

The shoreline, remnant embayment marshes, and mud flats support a diversity of plant species (see Marshall 1977 for details; cited in OSU, CLEAR and IU, ESAC 1979 Draft).

Mixed hardwood forests of varying age and composition occupy the slopes above the wetland and Star Island (located near the center of the estuary).

A diversity of fish have utilized this estuary (probably for feeding, spawning, or cover) during past years, however, increases in siltation and turbidity since the late 1950's have apparently caused reductions in the number and diversity of species requiring clear water that utilize the area.

The Muskrat (Ondatra zibethicus) is notable among the mammals recorded from the area. Information on birds, reptiles and amphibians, and invertebrates at Old Woman Creek is lacking (OSU, CLEAR and IU, ESAC 1979 Draft).

Ten rare or endangered species of plants have been recorded from Old Woman Creek National Estuarine Sanctuary (ODNR, Division of Natural Areas and Preserves, letters dated July 20, 1979 and January 15, 1980; scientific names according to Fernald 1950).

The "Proposed Status in Ohio" information presented below regarding plant species do not represent legal status at this time. A public hearing will be held on or about March 11, 1980 in Columbus, at which time a decision will be made about the legal status of these plants (Dennis Anderson, ODNR, Division of Natural Areas and Preserves, Columbus, telephone conversation on January 18, 1980.

Old Woman Creek National Estuarine Sanctuary (Continued)

Common and Scientific Names	Proposed Status in Ohio
Lake Erie Pinkweed, *Polygonum pensylvanicum* var. *eglandulosum*	Threatened (T)
Engelmann's Umbrella-sedge, *Cyperus engelmanni*	Potentially Threatened (P)
Early Buttercup, *Ranunculus fasicularis*	T
Smooth Rose, *Rosa blanda*	T
Plains Frostweed, *Helianthemum bicknellii*	T
Clasping-leaf Dogbane, *Acocynum sibiricum*	P
Slender Sedge, *Carex lasiocarpa*	Endangered (E)
Bushy Aster, *Aster dumosus*	T
Northern Blue-eyed Grass, *Sisyrinchium montanum*	E
Narrow-leaved Blue-eyed Grass, *S. mucronatum*	T
Seaside Spurge, *Euphorbia polygonifolia*	P
Purple Sand-grass, *Triplasis purpurea*	P
Inland Sea-rocket, *Cakile edentula* var. *lacustris*	P

Seaside Spurge also occurs north and east of the boundaries of the sanctuary near the mouth of Old Woman Creek and in the Oberlin Beach area to the east, along the Lake Erie coast (ODNR, Division of Natural Areas and Preserves, Columbus, letters dated July 20, 1979 and January 15, 1980.

In the nearshore of Lake Erie just east of the Berlin Township line in Vermilion Township, a fish, the Longnose Sucker (*Catostomus catostomus*, Ohio Endangered) and a mollusk, the Deer Toe* (*Truncilla truncata*, uncommon) have been recorded by the ODNR, Division of Natural Areas and Preserves (letters of 1979 and 1980).

Two species of mollusks considered to be uncommon in Ohio, recorded and two plant species considered to be proposed Potentially Threatened in Ohio, have been recorded along the Lake Erie shoreline off of the west side of Vermilion, Ohio. These species are (the mollusks) Deer Toe* and and Fawn Foot (*Truncilla donaciformis*). The plants the Inland Sea-rocket* and Purple Sand-grass*.

Huron River Wetland

This palustrine, non-wooded wetland (10 acres) is located in the City of Huron near the confluence of Mud Brook with the Huron River, in the lower estuarine part of the river approximately one-half mile from Lake Erie. The Huron River is considerably larger than that of Old Woman Creek with a

* Scientific name given previously.

Huron River Wetland (Continued)

basin of approximately 400 square miles, and has a mean discharge of 310 cubic feet per second (cfs). Relatively heavy sediment loads are also carried by the Huron River -- estimated to be 12,000 tons of suspended sediment and 50,000 tons of dissolved solids per year -- into Lake Erie (Herdendorf 1975 cited in OSU, CLEAR and IU, ESAC 1979 Draft). Information on biological components of this wetland is largely lacking. Increased siltation and turbidity in the Huron River since the late 1950's has probably also reduced fish species diversity and numbers in this wetland.

Approximately 0.5 miles upstream of this wetland along Mud Brook, Engelmann's Umbrella-sedge* (proposed Potentially Threatened) occurs. Rare species in two other coastal areas in Huron are recorded. A mollusk, the Eastern Sand Shell (Ligumia nasuta, uncommon) has been recorded along the jetty originating on the west side of the Huron River mouth in Lake Erie.

Four rare plants (given below) occur along Chaska Beach east of the jetty originating from the east side of the Huron river mouth (ODNR, Division of Natural Areas and Preserves, letters dated July 20, 1979 and January 15, 1980).

Common and Scientific Name	Proposed Status in Ohio
Schweinitz's Umbrella-sedge, Cyperus schweinitzii	P
American Beach Grass, Ammophila breviligulata	T
Purple Sand-grass*	P
Inland Sea-rocket*	P

Numerous other wetlands of various sizes are located within the valley of the Huron River upstream of the Huron River Wetland described above. Some of these are located within the City of Huron corporate limits, and the remainder are south of the city limits.

Dupont Marsh is the only such wetland in the Huron River valley that is (or soon will be) publicly owned. This 98.8-acre parcel was recently acquired by The Nature Conservancy and will be transferred to the ODNR, Division of Natural Areas and Preserves and dedicated as a State Nature Preserve. According to the Division of Natural Areas and Preserves (letters of 1979 and 1980), Hairy-fruited Sedge (Carex trichocarpa, proposed Potentially Threatened) occurs in Dupont Marsh. The vegetative community is described as a marsh or sedge meadow by the Division of Natural Areas and Preserves. This future preserve is located in Huron Township.

* Scientific names given previously.

Huron River Wetland (Continued)

One other relatively small wetland exists in Huron Township along Mud Brook about 2 miles upstream of the confluence of Mud Brook within the Huron River, where Mud Brook widens. No information on biota of this wetland is available.

Wetlands in the Huron River Floodplain extend into Milan Township for a distance of approximately one mile. Information on the biota of these wetlands is also lacking.

Sheldon's Marsh (Sawmill Creek Wetland Complex)

This (84 acre) complex consists of three palustrine, partially wooded wetlands, adjacent to the west side of Rye Beach, about 2.5 miles west of the Huron River. Part of the barrier beach forming the base of Cedar Point Sandspit separates these wetlands from Lake Erie. These wetlands lie at nearly the same elevation as Lake Erie.

This complex is now known as Sheldon's Marsh (formerly Sheldon's Folly and the Wildlife Realty properties). These properties have now both been recently acquired by the Division of Natural Areas and Preserves and eventually will be dedicated as Nature Preserves. Rare plant species recorded from Sheldon's Marsh are listed below (ODNR, Division of Natural Areas and Preserves, Columbus, letters dated July 20, 1979 and January 15, 1980).

Common and Scientific Names	Proposed Status in Ohio
Beach Wormwood, Artemisia caudata	T
Inland Sea-rocket*	P
Engelmann's Umbrella-sedge*	P
Seaside Spurge*	P
Bushy Cinquefoil, Potentilla paradoxa	T

Two sewage treatment plants discharge into Sawmill Creek, which may have an effect on Sheldon's Marsh.

Along the lower end of the Cedar Port Sandspit (defined as that portion of the spit east of the Huron-Perkins Township line), eight rare plants occur and are given below.

* Scientific names given previously.

Sheldon's Marsh (Continued)

Common and Scientific Names	Proposed Status in Ohio
Silverweed, Potentilla anserina	T
Seaside Spurge*	P
Tall St. John's Wort, Hypericum majus	T
Beach Wormwood*	T
Purple Sand-grass*	P
Sand Dropseed, Sporobulus cryptandrus	P
Schweinitz's Umbrella-sedge*	P
Englemann's Umbrella-sedge*	P

(ODNR, Division of Natural Areas and Preserves, letters dated July 20, 1979 and January 15, 1980).

Lastly, in this vicinity, Bald Eagles (Haliaeetus leucocephalus, Endangered in Ohio and the U.S.) have nested in the past (ODNR, Division of Natural Areas and Preserves, letters of July 20, 1979 and January 15, 1980).

Cedar Point Wetland

This small (10 acre), palustrine, partially wooded wetland is located at the far end of Cedar Point Spit, nearly adjacent to Lake Erie, within Cedar Point Amusement Park. OSU, CLEAR and IU, ESAC (1979 Draft) report that this wetland may have been partially filled for use as a recreational vehicle parking area. No site-specific information on flora and fauna of this wetland is available according to OSU, CLEAR and IU, ESAC.

In the area southeast of this wetland, however, one rare mollusk, the Eastern Sand Shell* (uncommon); and three plants, Beach Wormwood* (proposed Threatened), Schweinitz's Umbrella-sedge* (Potentially Threatened), and Inland Sea-rocket* (proposed Potentially Threatened) have been recorded (ODNR, Division of Natural Areas and Preserves, letters dated July 20, 1979 and January 15, 1980).

Plum Brook Area Wetland Complex

This complex (approximately 91 acres) consists of three wetlands near the coast approximately 4 miles southeast of Sandusky, near the entry of Plum Brook into Lake Erie. No site-specific information on flora and fauna of these wetlands is available according to OSU, CLEAR and IU, ESAC (1979 Draft).

* Scientific names given previously.

Plum Brook Area Wetland Complex (Continued)

One rare plant, the False Bulrush (Juncus scirpoides, proposed Threatened) occurs in this complex (ODNR, Division of Natural Areas and Preserves, letters dated July 20, 1979 and January 15, 1980).

These wetlands are privately owned.

East Bay Wetland Complex

This complex is comprised of two 'islands' (about 36 acres in total) of emergent marsh, classified as Lacustrine Systems, between mainland coast and Cedar Point, between 0.2 and 0.6 miles west of the Cedar Point Chausee bridge (OSU, CLEAR and IU, ESAC 1979 Draft). No site-specific information on biotic composition of these wetlands is available (OSU, CLEAR and IU, ESAC 1979 Draft; and letters from ODNR, Division of Natural Areas and Preserves 1979 and 1980). These wetlands are under public ownership as they are within Lake Erie waters.

Hemming Ditch Wetland

This large (about 178 acre) wetland consists of both palustrine and lacustrine components, and is located in the estuarine area of Hemming Ditch and along the shore of Sandusky Bay, about 3.5 miles east of downtown Sandusky. No site-specific biota information on this wetland is avaialble (OSU, CLEAR and IU, ESAC 1979 Draft; and letters from ODNR, Division of Natural Areas and Preserves, 1979 and 1980). The wetland is privately owned and lies between the Griffin-Sandusky Airport to the west and a sewage disposal facility to the southeast. This wetland may be under pressure from developers.

Big Island and Wetland Complex

This large (256 acre) complex consists of palustrine and lacustrine components, located in two areas within the City of Sandusky. The Big Island Wetland lies on the low peninsula projecting into Sandusky Bay from the west side of the mouth of Pipe Creek, just east of the Cedar Point Causeway. The second component, Pipe Creek Wetland, lies in from the coast along the valley of Pipe Creek. Construction of the water filtration plant and water intake and associated filling have apparently destroyed much of the Big Island Wetland. A sewage disposal facility is located inland in Pipe Creek near the aqueduct. This area is privately owned and subject to severe development pressure. No site-specific information on flora and fauna of this complex is available (OSU, CLEAR and IU, ESAC 1979 Draft and letters of 1979 and 1980 from ODNR, Division of Natural Areas and Preserves).

Mills Creek Wetland

This small (about 5 acres) wetland is located along Mill Creek on the west side of the City of Sandusky between Tiffin Avenue on the south and Monroe Street on the north. This area was identified as a 'wetland' in the ODNR, Division of Water, Coastal Zone Management Sections's 1979 Public Review Draft, but is not included in the draft inventory by OSU, CLEAR and IU, ESAC. This area was visited on October 4, 1979 by a biologist from Woolpert Consultants, and is described in the " West Side Neighborhoods Development Plan and Program" (Woolpert Consultants 1979 in prep). No rare plants were observed during the brief survey, however, the time-of-year of the visit made positive identification of some plant species difficult or impossible. A cattail marsh is located on the west side of a bend in the stream; the streamside is also bordered in other areas with emergents such as arrowhead and Water Plaintain; and a successional forest borders the west side of the creek. Observations of two rare bird species, an unidentified Marsh-Wren (Cistothorus sp.) and a Veery (Catharus fuscescens) in the area and the appearance of the habitat indicated that this area provides suitable nesting habitat for these species. Further field studies during 1980 were recommended, and a recommendation that the area be preserved as a local natural area were made in this report (Woolpert Consultants 1979 in prep.). Filling of the western part of the forest and wetland by industrial concerns has already taken place and apparently is continuing. Soil erosion from the steep banks of the unvegetated fill materials is adversely affecting water quality in this wetland as well as the filling activity eliminating portions of the wetland itself. It was recommended that this area be protected from further encroachment (Woolpert Consultants 1980).

One rare mollusk, the Knob Shell (Obliquaria reflexa, uncommon) has been recorded in Lake Erie north of the intersection of U.S. 6 and S.R. 99 (ODNR, Division of Natural Areas and Preserves, letters of 1979 an 1980).

Bay View Wetland

This is a very large wetland (640 acres), located in Margaretta Township near Bay View. The area is mainly not wooded, and is protected by earthen dikes and managed for waterfowl. This wetland lies adjacent to the Lake Erie Shore and is at about the same elevation as Lake Erie. Site-specific information on the common flora and fauna of the area is lacking (OSU, CLEAR and IU, ESAC 1979 Draft); however, the following rare species are recorded from the vicinity of this wetland by ODNR, Division of Natural Areas and Preserves (letters of 1979 and 1980), and are listed below.

Bay View Wetland (Continued)

Group	Common and Scientific Names	Proposed Status in Ohio
Plants	Clasping-leaf Dogbane*	Potentially Threatened (P)
	Wapato, Saggitaria cuneata	Threatened (T)
	Silverweed*	T
	Stiff Goldenrod (Solidago rigida)	P
		Status in Ohio**
Animals	Western Banded Killifish, Fundulus diaphanus menona	Endangered
	Least Bittern, Ixobrychus exilis (nesting)	T
	Short-billed Marsh-Wren, Cistothorus platensis (nesting)	T

There is also a breeding colony (rookery) of Great Blue Herons (Andrea herodias) in the vicinity.

Because of the Bay View Wetland's large size and management, it probably supports a diverse community of wetland species. OSU, CLEAR and IU, ESAC (1979 Draft) suggest that development pressure on this area is minimal. Four mollusks, classified as uncommon in Ohio by the ODNR, Division of Wildlife, are reported from the near shore vicinity of Crystal Rock in Lake Erie. These species are the Eastern Sand Shell*, Deer Toe*, Knob Shell*, and Fawn Foot*.

Willow Point Wetland Complex (Including Whites Landing)

This complex consists of a large (205 acre) area formerly occupied by the Ohio Agricultural Experimental Station at Willow Point, about 10 miles west of Sandusky. A smaller wetland (10 acres), on the border of Erie and Sandusky Counties, is located near Whites Landing. These wetlands are not wooded and classified as palustrine. They are protected by earthen and rip-rap dikes, however, these dikes are breached occasionally during high-water storms, with resultant flooding of the inland marshes. These areas are privately owned and managed for waterfowl hunting (OSU, CLEAR and IU, ESAC 1979 Draft). The average rate of shore recession in these areas is 5-8 feet per year (U.S. Army Corps of Engineers 1953 cited in OSU, CLEAR and IU, ESAC 1979 Draft).

* Scientific name given previously.
** Only endangered animal species are legally protected in Ohio.

Willow Point Wetland Complex (Including White's Landing)

No site-specific information on common species of plants and animals is available according to OSU, CLEAR and IU, ESAC Draft). Four rare plants and four rare mollusks have been recorded from the Willow Point area by ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980), and are given below.

Group	Common and Scientific Names	Proposed Status in Ohio
Plants	Southern Wapato*	P
	Engelmann's Umbrella-sedge*	P
	American Water-milfoil, Myriophyllum exalbescens	P
	Wapato*	T
		Status in Ohio
Mollusks	Knob Shell*	Uncommon (U)
	Deer Toe*	U
	Fawn Foot*	U
	Eastern Sand Shell*	U

Non-Coastal Wetlands, by Township

Because the State of Ohio has not been surveyed completely by biologists, it must be noted that a lack of records of rare species or other information on particular areas may simply indicate that the areas have not been surveyed, rather than that the area was surveyed and found to contain no rare or uncommon species.

Vermilion Township:

One small area of wetland habitat is located in the southeast corner of the Township, just north of the Berlin Township line, east of Frailey Road. No information on the current status of this area is available, and there are no records of rare species in the vicinity.

Florence Township:

Sixteen (16) small wetlands, all located in 'upland' areas away from streams, are shown on U.S.G.S. maps that include Florence Township. Nine (9) of these wetlands are forested according to the U.S.G.S. 7.5 minute quadrangle map. Most of these wetlands are located in the north and central part of the Township. Information on the current status of these areas is unavailable, and there are no records of rare species from any of these wetlands.

* Scientific name given previously.

Berlin Township:

Wetlands occur in two areas of Berlin Township outside of the Coastal Zone -- four small wetlands are located in the southeast portion of the Erie Nuclear Electric Generating Station in a headwater area of Cranberry Creek; and in the southeast corner of the Township, two large and five smaller wetlands are shown on the U.S.G.S. quadrangle map. All of the wetlands at the proposed Erie Nuclear EGS site are wooded. A general description of the forest types there is given in the Environmental Assessment of the proposed Erie Nuclear EGS, included in this report.

Both of the large wetlands, and four of the five smaller wetlands in the southeast corner of the Township are wooded. Information on the current status and species composition of the wetlands in the southeast corner of the Township is lacking.

Huron and Milan Townships:

Since the wetlands that occur in Huron and Milan Townships are in the floodplain of the Huron River, they are coastal in nature and have been described in the Coastal Wetlands section of this report.

City of Sandusky:

Only coastal wetlands occur in the City of Sandusky, and these have been described in the Coastal Wetlands section of this report.

Perkins Township:

Part of the Hemming Ditch Wetland Complex extends into Perkins Township. This wetland is classified as a Coastal Wetland and has been described in the Coastal Wetlands section of this report. No other wetlands occur in Perkins Township according to the U.S.G.S. quadrangle map.

Oxford Township:

Three small wetlands are located within the NASA property in northastern Oxford Township. Information on the biota and current status of these wetlands is lacking.

Margaretta Township:

Five wetland areas are shown in Margaretta Township, all located within Resthaven Wildlife Area owned by ODNR, Division of Wildlife. Resthaven occupies 2,210 acres, almost all of which is located in Erie County, Margaretta Township. A small portion of the southwest corner of Resthaven is in Sandusky County. Resthaven is operated as a public hunting and fishing area. A mixture of rare praire and wetland plants and three rare animals have been recorded from Resthaven, according to ODNR, Division of Natural Areas and Preserves (letters dated 1979 and 1980).

Group	Common and Scientific Names	Proposed Status in Ohio
Plants	Clasping-leaf dogbane*	Potentially Threatened (P)
	Southern Hairy Rockcress, Arabis hirsuta	P
	Northern Reed-grass, Calamagrostis inexpansa	Endangered (E)
	Grass-pink, Calapogon tuberosus	P
	Brown Bog Sedge, Carex buxbaumii	Threatened (T)
	Crawe's Sedge, C. crawei	T
	Mead's Sedge, C. meadii	T
	Sartwell's Sedge, C. sartwellii	T
	Slender Millet Sedge, C. tetanica	T
	Little Green Sedge, C. viridula	T
	Twig-rush, Cladium mariscoides	T
	White Lady's-slipper, Cypripedium candidum	E
	Yellow-seeded Spikerush, Eleocharis elliptica	T
	Beaked Spikerush, E. rostellata	P
	Fringed Gentian, Gentiana crinita	T
	Kalm's St. John's-wort, Hypericum kalmianum	T
	Alpine Rush, Juncus alpinus	T
	Baltic Rush, J. balticus	T
	American Water-milfoil*	P
	Slender Naiad, Najas flexilis	P
	False Gromwell, Onosmodium hispidissimum	P
	Grass-of-Parnassus, Parnassia glauca	P
	Silverweed*	T
	Shrubby Cinquefoil, Potentilla fruticosa	P
	Prairie Rattlesnake-root, Prenanthes racemosa	T
	Smooth Rose*	T
	Hoary Willow, Salix candida	T
	Limetone Savory, Staureja arkansana	P

* Scientific name given previously.

Margaretta Township: (Continued)

Group	Common and Scientific Names	Proposed Status in Ohio
Plants	Low Nut-rush, Scleria verticillata	T
	Balsam Squaw-weed, Senecio pauperculus	P
	Pale Carrion-flower, Smilax lasioneura	P
	Ohio Goldenrod, Solidago ohioensis	P
	Riddell's Goldenrod, S. riddellii	P
	Stiff Goldenrod, S. rigida	P
	Marsh Arrow-grass, Triglochin palustre	T

		Status in Ohio**
Animals	Tiger Salamander, Ambystoma tigrinum	T
	Short-billed Marsh-Wren* (nesting)	T
	Fox Snake, Elaphe vulpina	T

A discussion of the dominant prairie species at Resthaven will be given in the section on other natural communities in Erie county, that follows this section.

Immediately south of Resthaven, three other rare plants occur according to ODNR, Division of Natural Areas and Preserves (letters of 1979 and 1980):

Common and Scientific Names	Proposed Status in Ohio
Carolina Whitlow-grass, Draba reptans	Endangered
Shrubby Cinquefoil*	Potentially Threatened
Sessile Dodder, Cuscuta compacta	Threatened

Groton Township:

No wetlands are shown by the U.S.G.S. quadrangle map in Groton Township.

* Scientific name given previously.
** Only endangered animals are legally protected at this time.

Other Natural Communities and Areas

A variety of other natural communities and isolated records of rare species occur throughout Erie County. These communities and individual records may be relics of the diversity of original communities that occupied Erie County before European Settlement, or they could be communities that are newly-developing in response to on-going land use and drainage changes. A few areas that are attractive to wintering waterfowl, of geological interest, or possess other important features are briefly described below.

The sources of information consulted for this section include the Toledo Naturalists Association, Education Committee (1965), Herrick (1974), Melvin (1974), Cusick and Troutman (1978); ODNR, Division of Natural Areas and Preserves (1978 and letters dated July 20, 1979 and January 15, 1980.

Vermilion Township:

Chappel Ravine - This area is located along Chappel Creek in south-central Vermilion Township, between Furnace and Joppa Roads. Steep cliffs border the creek floodplain. The area supports a mature hardwood forest and has a diverse spring flora. Berea Sandstone outcrops can be seen in this ravine (Herrick 1974). Bushy Aster (*Aster dumosus*, proposed Threatened) has been recorded from this area (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Also in the south-central area of Vermilion Township, Lake Erie Pinkweed (proposed Threatened) has been recorded (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Three rare plants have been recorded in the vicinity of the Norfolk and Western Railroad tracks between Joppa and Poorman Roads: Compass-plant (*Silphium laciniatum*, proposed Endangered in Ohio), Yellow-fruited Sedge (*Carex annectans* var. *xanthocarpa*, proposed Threatened), and Necklace Sedge (*C. projecta*, proposed Endangered).

Florence Township:

A diversity of rare plants have been recorded in eastern Florence Township along the Vermilion River and the East Fork (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980). These species are listed below:

Florence Township: (Continued)

Group	Common and Scientific Names	Proposed Status in Ohio
Plants	Canadian Buffalo-berry, Shepherdia canadensis	Threatened (T)
	Spotted Coral-root, Corallorhiza maculata	Potentially Threatened (P)
	Hybrid fern, Dryopteris goldiana x. D. intermedia	hybrid fern
	Putty-root, Aplectum hyemale	P
	Ostrich Fern, Matteuccia pensylvanica	P
	Necklace Sedge*	Endangered (E)
	Grass-of-Parnassus*	P
	Southern Ladies' Tresses, Spiranthes lacera var. gracilis (Spiranthes gracilis)	P
	Small Fringed Gentian, Gentiana procera	P
	American Ginseng, Panax quinquefolius	P

In the northeast corner of Florence Township, Round-leaved Dogwood (Cornus rugosa, proposed Threatened) has been recorded along Chappel Creek. Along Sugar Creek near Angling Road in the north-central part of the Township, Clasping-leaf Dogbane*(proposed Potentially Threatened) has been recorded by the ODNR, Division of Natural Areas and Preserves (letters of 1979 and 1980).

Camp Timberlane - This is a Girl Scout Camp, 324 acres in size, located on both sides of the Vermilion River, on County Line Green Road near Birmingham. The southern portion of this camp supports a Beech-Maple type forest-type with an association of ash, Black Walnut, and Slippery or Red Elm. The northern portion of the property is old farmland that supports successional vegetation (Melvin 1974).

Berlin Township:

Berlin Heights Ravine - This Ravine is situated in the Village of Berlin Heights along Old Woman Creek. The property is privately-owned but accessible to the public. Steep-sided cliffs border the floodplain of the creek. The area is noted for its very large Hemlocks and Butternut trees among a variety of other species, and has a diverse flora of wildflowers, ferns, and mosses (Toledo Naturalists Association Education Committee 1965, Herrick 1974). One rare plant, Brook Pimpernel (Veronica anagallis-aquatica, proposed Potentially Threatened) occurs in this area (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

* Scientific name previously given.

Berlin Township: (Continued)

Proposed Erie Nuclear Electric Generating Station - Several stands of relatively mature forest occur on this site. Further descriptive details are presented in the Environmental Assessment on this proposed generating station, elsewhere in this report. Long-bracted Orchid (Coeloglossum viride or Habenaria viridis, proposed Endangered) occurs on this site (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Two other isolated records of a rare plant, Few-flowered Tick-trefoil (Desmodium pauciflorum, proposed Threatened) are known from north-central Berlin Township. One location is the southwest corner of Deehr Road and S.R. 61; the other is in the vicinity of Old Woman Creek between Barrows Road on the north and Mason Road on the south.

Huron-Perkins Township:

Conrail Railroad Prairie - This linear prairie area extends along the Conrail Railroad tracks and Cleveland road East from Griffing Airport east to Camp Road. The area is bisected by the Perkins-Huron Township line; however, the Huron Township portion of this prairie between Plum Brook and Perkins Avenue is reported as "in relatively good condition and is worthy of preservation" (Cusick and Troutman 1978). Invading woody plants, stimulated by lack of fires, has adversely affected this community, and the area may be obliterated or have already been obliterated by widening of U.S. Route 6.

Noteworthy plants of this community are listed below (Cusick and Troutman 1978).

Big Bluestem, Andropogon gerardi
Little Bluestem, A. scoparius
Sideoats Grama-grass, Bouteloua curtipendula
Switch Grass, Panicum virgatum
Indian Grass, Sorghastrum nutans
Prairie Cord Grass, Spartina pectinata
Rough Dropseed, Sporobulus asper
Ohio Spiderwort, Tradescantia ohioensis
Starry False Solomon's-seal, Smilacina stellata
Nodding Ladies' Tresses, Spiranthes cernua
Flowering Spurge, Euphorbia corollata
Water Hemlock, Cicuta maculata
Wild Bergamot, Monarda fistulosa
Germander, Teucrium canadense
Unidentified Beard-tongue, Pentstemon sp.
Oldfield Thistle, Cirisium discolor
Tall Boneset, Eupatorium altissimum
Gray-headed coneflower, Ratibida pinnata

Huron Township:

Near the intersection of S.R. 13 and Mud Brook, South of the City of Huron, beds of American and oriental Lotus are common (Herrick 1974).

Milan Township:

Galpin Wildlife Preserve - This preserve, located in Milan, was willed to the Village "to be preserved in its wild state as long as time shall endure". It consists of wooded hills and bottomland, and has a rich diversity of flora (Toledo Naturalists Association, Education Committee 1965, Herrick 1974).

Perkins Township:

The Conrail Railroad Prairie, previously described under Huron-Perkins Townships extends into Perkins Township.

Perkins and Oxford Townships:

Lewis Research Center, Plumbrook Station - This area, owned by NASA, is described as unique in Erie County for having both dry and wet soils, hence, a diversity of plant species. It is also in danger of being drastically disturbed by development or farming activity. Noteworthy species recorded from this area are listed below (Cusick and Troutman 1978; ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Common and Scientific Names	Proposed Status in Ohio
Big Bluestem*	
Little Bluestem*	
Switch Grass*	
Ohio Spiderwort*	
Yellow Stargrass, Hypoxis hirsuta	
White Blue-eyed Grass, Sisyrinchium albidum	
Nodding Ladies' Tresses*	
Bastard-Toadflax, Comandra umbellata	
Tick-Trefoil, Desmodium sp.	
Round-headed Bush-clover, Lespedeza capitata	
Field Milkwort, Polygala sanguinea	
Arrow-leaved Violet, Viola sagittata	
Golden Alexanders, Zizia aurea	

* Scientific name previously given.

Perkins and Oxford Townships: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Milkweed, Acerates sp.	
Virginia Mountain-miht, Pycanthemum virginianum	
Flowering Spurge*	
Wild Bergamot*	
Gray-headed Coneflower*	
Purple Foxglove, Gerardia purpurea	
Pale-spike Lobelia, Lobelia spicata	
Plaintain-leafed Everlasting, Antennaria plantaginifolia	
Virginia Meadow-beauty, Rhexia virginica	Threatened (T)
Prairie Panic-grass, Panicum oligosanthes	Potentially Threatened (P)
Lance-leaved Violet, Viola lanceolata	Endangered (E)
Grooved Flax, Linum sulcatum	P
Variegated Scouring-rush, Equisetum variegatum	P
Dwarf Bulrush, Hemicarpa micrantha	E
Least St. John's Wort, Hypericum gymnanthum	E
Flat-leaved Rush, Juncus platyphyllus	T

Oxford Township:

Norfolk and Western Railroad Site - Although being invaded by woody species because of a lack of fire, this area has a relatively high species diversity. This is owned by the Norfolk and Western Railroad. Noteworthy plants of this area are listed below (Cusick and Troutman 1978; ODNR, Division of Natural Areas and Preserves, letters of 1978 and 1980).

Milan State Wildlife Area - This 296 acre area has over 200 acres of woodland. Dominant trees include Red and White Oak, hickory, cottonwood, ash, maple, and walnut. This area lies partly in Milan Township and partly in Oxford township, with its southern boundary being the Erie-Huron County line. The Huron River traverses the area.

Wild Red Raspberry (Rubus idaeus var. strigosus, proposed Potentially Threatened) occurs in the area southwest of the intersection of Mason and River Roads in the central part of the Township.

* Scientific name previously given.

Oxford Township: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Big Bluestem*	
Little Bluestem*	
Blue-joint Reed Grass, Calamagrostis canadensis	
Switch Grass*	
Indian Grass*	
Prairie Cord Grass*	
Ohio Spiderwort*	
Nodding Onion, Allium cernuum	
Ground Nut, Apios americana	
Prairie False Indigo, Baptisia leucantha	P
Showy Tick-trefoil, Desmodium canadense	
Round-headed Bush Clover*	
Field Milkwort*	
Flowering Spurge*	
Closed Gentian, Gentiana andrewsii	
Tall Green Milkweek, Asclepias hirtella	
Wild Bergamot*	
Tall Coreopsis, Coreopsis tripteris	
Tall Boneset*	
False Sunflower, Helenium autumnale	
Saw-toothed Sunflower, Helianthus grosseserratus	
Stiff-haried Sunflower, H. Hirsutus	
Gray-headed Coneflower*	
Prairie Dock, Silphium terebenthinaceum	
Whorled Rosinweed, S. trifoliatum	
Riddell's Goldenrod, Solidago ridellii	P

Kimball or Firelands Railroad Prairie - This area is owned by the Chessie System Railroad, and is located in Central Oxford Township. The prairie occurs along both sides of the B&O tracks (Chessie tracks?) between Interstate 80/90 on the north and the Erie-Huron County line on the south. This prairie supports a very diverse community of plants, and is reported to contain the last virgin prairie sod in Erie County. The plants are listed below (Cusick and Troutman 1978; ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Common and Scientific Names	Proposed Status in Ohio
Big Bluestem*	
Little Bluestem*	
Blue-joint Reed Grass*	

* Scientific names given previously.

Oxford Township: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Canada Wild Rye, Elymus canadensis	
Switch Grass*	
Indian Grass*	
Prairie Cord Grass*	
Ohio Spiderwort*	
Michigan Lily, Lilium michiganense	
Starry False Solomon's Seal*	
Yellow Stargrass*	
White Blue-eyed Grass*	
Wild four-o'clock, Mirabilis nyctaginea	
Canada Anemone, Anemone canadensis	
Thimble-flower, A. virginiana	
Purple Meadow-rue, Thalictrum dasycarpum	
Pasture Rose, Rosa carolina	
Ground Nut*	
Prairie False Indigo*	P
Partridge-pea, Cassia fasiculata	
Showy Tick-trefoil*	
Marsh Vetchling, Lathyrus palustris	
Round-headed Bush-clover*	
Field Milkwort*	
Flowering Spurge*	
Arrow-leaved Violet*	
Winged Loosestrife, Lythrum alatum	
Biennial Gaura, Gaura biennis	
Water Hemlock*	
Loosestrife, Lysimachia sp.	
Closed Gentian*	
Tall Green Milkweed*	
Sullivant's Milkweed, Asclepias sullivantii	
Butterfly-weed, A. tuberosa	
Prairie Phlox, Phlox pilosa	
Hoary Vervain, Verbena stricta	
Wild Bergamot*	
Obedient-plant, Physostegia virginiana	
Gerardia sp.	
Aster spp.	
White Heath Aster, Aster ericoides	
Tall Coreopsis*	
Saw-toothed Sunflower*	
Ashy Sunflower, Helianthus mollis	T
Dense Blazing-Star, Liatris spicata	
Prairie Rattlesnake-root, Prenanthes racemosa	T

* Scientific name given previously.

Oxford Township: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Gray-headed Coneflower*	
Black-eyed Susan, Rudbeckia hirta	
Prairie Dock*	
Great Lakes Goldenrod, Solidato remota	T
Stiff Goldenrod*	P
Western Ironweed, Vernonia fasiculata	E

Margaretta Township:

Resthaven Wildlife Area (Castalia Prairie) - Approximately 100 acres of the 2,210 acre area supports a fairly diverse communty of Prairie vegetation. Approximately 40 acres of this prairie is managed by periodic burning. Before becoming a State-owned Wildlife Area, this area was used as a marl and peat strip-mine. Areas of marly ferns and wet prairie occur in this area. Noteworthy species occurring there are listed below (Cusick and Troutman 1978; ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980):

Common and Scientific Names	Proposed Status in Ohio
Big Bluestem*	
Little Bluestem*	
Indian Grass*	
Prairie Cord Grass*	
Beaked Spike-rush, Eleocharis rostellata	P
Nodding Onion*	
Starry False Solomon's-seal*	
Yellow Stargrass*	
White Blue-eyed Grass*	
White Lady's-slipper*	E
Nodding Ladies' Tresses*	
Anemone, Anemone sp.	
Wild Senna, Cassia marilandica	
Biennial Gaura*	
Water Hemlock*	
Cowbane, Oxypolis rigidior	
Prairie Loosestrife, Lysimachia quadriflora	
Fringed Gentian, Gentiana procera	T
Butterfly-weed*	
Hoary Puccoon, Lithospermum canescens	
Hairy Puccoon, L. croceum	
False Gromwell*	P

* Scientific name given previously.

Margaretta Township: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Wild Bergamot*	
Virginia Mountain-mint*	
Tall Coreopsis*	
Tall Sunflower, Helianthus giganteus	
Saw-toothed Sunflower*	
Rough Blazing-star, Liatris aspera	
Blazing-star, L. scariosa	
Dense Blazing-star*	
Gray-headed coneflower*	
Prairie Dock*	
Whorled Rosinweed*	
Ohio Goldenrod*	P
Riddell's Goldenrod*	P

Between Castalia and State Route 2 to the east, three rare plants have been recorded: Limestone Savory (Satureja arkansana, proposed Potentially Threatened), Flat-stem Spikerush (Eleocharis compressa, proposed Potentially Threatened), and Prickly Pear (Opuntia compressa, proposed Potentially Threatened).

Two 'Blue Holes' or springs are located in Castalia. One is simply called the Blue Hole, is privately-owned and is located at 502 North Washington Street. The other is called Cold Creek Pond, and is located on Spring Street. Thousands of ducks apparently congregate on this pond during the winter. Cold Creek Pond is the source of Cold Creek, which flows north eastward through the west side of Sandusky before emptying into Lake Erie (Toledo Naturalists Association, Education Committee 1965).

Groton Township:

Limestone Hill - This area is located in the northwest corner of the Township, along the Groton-Margaretta Township line. Eight rare plant species have been recorded from this area, and are listed below (ODNR, Division of Natural Areas and Preserves, letters of 1979 and 1980).

Common and Scientific Names	Proposed Status in Ohio
Grooved Flax*	P
Carolina Puccoon, Lithospermum caroliniense	P
Prairie Panic-grass*	P
Fall Witch-grass, Leptoloma cognatum	T

* Scientific name given previously.

Groton Township: (Continued)

Common and Scientific Names	Proposed Status in Ohio
Prairie Thimbleweed, Anemone cylindrica	T
Carolina Whitlow-grass, Draba reptans	E
Western Hairy Rock-cress, Arabis hirsuta var. pycnocarpa	T
Dwarf Hackberry, Celtis tenuifolia	P

Overview and Summary

Because the original vegetation of Erie County was very diverse (Gordon 1966, 1969), a corresponding diversity of remnant communities remain. Many of the larger areas still extant are in areas difficult to develop, such as low-lying floodplains or other areas with poorly drained soils. Forest, wetland, and prairie communities have been greatly reduced, and as a result of this, many of the plant and animal species declining in abundance in the State are occupants of such communities. At least some of the declines in species diversity and populations of species with special habitat requirements might not be readily detected or proven because of a lack of adequate previous baseline information with which to compare present and future information.

Although there are numerous public and private preserves, wildlife management areas, and parks, scattered throughout the County, these areas are probably not large enough or sufficiently interconnected to, by themselves, insure long-term survival of some species. The species most susceptible to further declines are those with very limited distributions and/or very specialized habitat requirements, such as many of the rare plants mentioned in this section, fish and mollusk species requiring clean waters lacking silt and sediment, and predatory animals requiring large blocks of habitat for survival, such as Bobcats and Bald Eagles. Finally, large blocks of forest habitat may also be required for long-term survival of a variety of other birds and mammals, many of which are best described as forest-dwelling species, which are declining in abundance in the State. These declines of forest species are at least partly attributable to loss of forest habitat, as large blocks of forest become fragmented and/or reduced in size by development or agricultural activity. In addition, however, recent research on the relationship between species diversity and populations of forest birds and small mammals, and the size and degree of isolation (distance from other similar areas) of forest habitats indicates that small, isolated blocks of forest habitat support lower species diversity and populations than larger, less isolated forests (Forman et al. 1976), Galli et al. 1976, Whitcomb et al. 1976, Whitcomb 1977, Gottfried 1979). Although the subject of considerable disagreement in the

literature, Forman et al. (1976) suggest that forest areas of at least 40 hectares (approximately 99 acres) may be required for long-term survival of some species. On the other extreme of the spectrum, however, long-term survival of stable forest communities containing a complete spectrum of organisms (plants, herbivorous and omnivorous animals and predators) may require maintenance of blocks of forest on the order of several thousand acres in size (Whitcomb et al. 1976).

Although it appears unlikely at present that such large areas of contiguous forest will be protected from destruction or even exist at this time in Erie County, there is an alternative available that can be fairly easily implemented in land use planning that will aid in enhancing the biological diversity of communities, particularly forests, but which may also apply to communties such as wetlands and prairies also. Research by McClintock et al. (1977) revealed that species characteristically found only in large forests also occurred in wooded peninsulas or corridors extending from large blocks of forest.

Establishing or maintaining corridors of forested land, perhaps even relatively narrow strips 100 yards wide (or possibly narrower) that interconnect other forested areas is likely to enhance the diversity of such communities. These corridors would provide avenues for dispersal and exchange of animals and plants between areas, allowing formerly isolated areas to be more easily colonized (or recolonized), as well as increasing the amount of genetic diversity in these areas. These corridors could easily be used as footpaths, bikeways and/or ski trails as long as the trails are not so wide that distinct, sunlit forest edges are created.

Establishment of maintenance of forest corridors is already being implemented to some degree in floodplain areas where only certain kinds of development are permitted, and would complement current plans for establishment of footpaths and bikeways.

Wet prairies and other wetland habitats in river and stream valleys are still connected in some areas by the rivers and streams, and in some other areas, such as in Margaretta Township, railroad rights-of-way serve the same interconnecting function. Abandoned rights-of-way could be used for paths and trails while supporting diverse natural communities.

Encouraging farmers and other private landowners to leave forest or encourage forest or wetland development along the banks of streams and rivers in the County would result in a variety of benefits. These include increased production of game species such as ducks; upland game such as Bobwhite, Ring-necked Pheasant, and Eastern Cottontails, and furbearers such as Mink and Muskrat. Natural, permanent vegetation along drainageways also filters and traps sediments and agricultural chemicals that would otherwise wash into streams, hence resulting in improvement in water quality that would increase the quality of areas available for use by game and commercial species of fish.

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CHAPTER IV

EVALUATION OF PREVAILING DEVELOPMENT PATTERN

The Agricultural Sector and Agricultural Land

Agriculture historically has occupied an important place in the Erie County economy and continued to do so at the present time. Agricultural land is the single largest land use within Erie County encompassing in 1974 some 96,302 acres out of the County's land area of 174,008 acres or 55.3%. The amount of farm land has decreased somewhat in recent years from 109,055 acres (1964) to 96,302 acres (1974). The total number of Erie County's farms decreased from 698 in 1964 to 619 in 1974, a decrease of -11.3%. Over the same time period, the value of Erie County farms increased by almost three-quarters from a combined total of $44,225,280 to $75,871,000 for an increase of +71.6%. Whether measured in average value per individual farm or average value per farm acre the economic value of Erie County farms almost doubled over the 1964-1974 decade (see Table 4-1).

These local area averages somewhat paralleled that throughout the State of Ohio except that the percentage decrease in total number of farms was considerably greater over the entire State than what occurred within Erie County, and except that the average size farm actually increased by +16.1% throughout Ohio, whereas the typical Erie County farm remained more or less the same size over the 1964-1974 decade. This latter difference is illustrated in greater detail in Table 4-1. The number of 1-9 acre farms and 10-49 acre farms increased significantly in Erie County between 1964 and 1974, whereas there was a noticeable decline in those smaller size farms at the state level. At the other end of the spectrum Erie County witnessed only a very slight increase in the number of relatively large farms (defined as 500-999 acres and 1,000 acres and above, whereas throughout the State of Ohio there was a substantial increase in both of those categories (+41.5% for the 500-999 acre farms and +115.3% for the 1,000 acres and over farms). One probable explanation for this difference is that there are likely to be a relatively large number of part-time farmers residing on smaller landholdings in close proximity to Erie County's cities and villages. While the rural farm population of Erie County declined between 1960 and 1970, from 3,589 to 3,262 persons, this represents a relatively small number of persons.

In addition to the 96,302 acres of farm land (1974) another 38,900 acres (or 23% of the total County land area) remained undeveloped including all of the wetlands, woodlands, wasteland and other vacant undeveloped land. This type land is somewhat more prevalent in the eastern end of Erie County. The configuration of "prime" agricultural land has been illustrated in Plate 4. Discussion of the soil types comprising "prime" agricultural land is contained in Chapter III. "Prime" agricultural land is a relative term inasmuch as the other types of agricultural lands are often nearly as productive as those rated "prime". Good, solid management by the individual farmer can do a great deal to overcome soil deficiencies which has

Table 4-1
Erie County
SIZE AND VALUE OF FARMS
1964-1974

GEOGRAPHIC LOCATION/ YEAR	TOTAL NUMBER OF FARMS	LAND IN FARMS		TOTAL LAND AREA		VALUE		
		TOTAL LAND (ACRES)	AVG. SIZE OF FARM (ACRES)	TOTAL LAND IN COUNTY/ STATE (ACRES)	PERCENT IN FARMS	TOTAL (DOLLARS)	AVERAGE* PER FARM (DOLLARS)	AVERAGE* PER ACRE (DOLLARS)
ERIE COUNTY								
1964	698	109,055	156.2	168,965	64.5%	$ 44,225,280	$ 63,360	$411.41
1969	702	106,733	152.0	168,832	63.2%	$ 63,285,952	$ 90,150	$592.93
1974	619	96,302	156.0	168,832	57.0%	$ 75,871,000	$122,571	$788.00
% Change- 1964-74	-11.3%	-11.7%	-0.1%	-0.1%	-11.6%	+71.6%	+93.5%	+91.5%
STATE OF OHIO								
1964	120,385	17,619,500	146.4	26,222,500	67.1%	$ 5,221,458,600	$ 43,373	$295.42
1969	111,332	17,111,459	153.6	26,224,768	65.2%	$ 6,819,215,332	$ 61,251	$398.52
1974	92,158	15,668,238	170.0	26,224,768	59.2%	$11,055,607,000	$119,964	$706.00
% Change- 1964-74	-23.5%	11.1%	+16.1%	+0.0%	-11.8%	+111.73%	+176.6%	+139.0%

*For land and buildings

Source: U.S. Department of Commerce: Bureau of the Census, Census of Agriculture - Ohio, Section Two, County Reports, 1969, 1974

Table 4-2
Erie County
NUMBER OF FARMS BY SIZE
1964-1974

	1-9 ACRES		10-49 ACRES		50-99 ACRES		100-499 ACRES		500-999 ACRES		1,000 ACRES & OVER	
	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL
ERIE COUNTY												
1964	19	2.7%	142	20.3%	150	21.5%	365	52.3%	20	2.9%	2	0.3%
1969	37	5.3%	156	22.2%	174	24.8%	304	43.3%	29	4.1%	2	0.3%
1974	39	6.3%	209	33.8%	125	20.2%	199	32.2%	23	3.7%	1	0.2%
% CHANGE-1964-74	+105.3%		+47.2%		-16.7%		-45.5%		+15.0%		-50.0%	
STATE OF OHIO												
1964	5,312	4.4%	21,339	17.7%	20,018	24.1%	61,247	50.9%	3,072	2.6%	393	0.3%
1969	5,653	5.1%	19,729	17.7%	26,333	23.7%	55,317	49.7%	3,768	3.4%	532	0.5%
1974	4,001	4.3%	16,163	17.5%	21,615	23.5%	45,187	49.0%	4,346	4.7%	846	0.9%
% CHANGE-1964-74	-24.7%		-24.3%		-25.5%		-26.2%		+41.5%		+115.3%	

Source: U.S. Department of Commerce: Bureau of the Census, Census of Agriculture - Ohio, Section Two, County Reports, 1969, 1974

often been the case in various parts of Erie County where the farmers have utilized almost every available acre for agricultural purposes regardless of the measure of productivity of the soil. "Prime" agricultural land does need to be preserved wherever possible in Erie County. There do exist certain locations within the County where areas for "community expansion" happen to be "prime" agricultural land. In these instances, the land use planning that is done should investigate whether alternative sites are available for "community expansion" and, to the extent that they are, these alternative locations should be utilized for new urban development. The conversion of agricultural land in general and "prime" agricultural land in particular has occurred over the last several decades within Erie County. Precise figures are not available as to how many acres have undergone such conversion. Note has been made in various sections of this report of the substantial and significant increase in rural non-farm population (Chapter II) and the emerging pattern of "strip" residential development along numerous county and township roads as well as State highways throughout many sections of Erie County. In addition, discussions with the Erie County Agricultural Extension Agent have brought out the fact that certain types of farming (most notably the raising of animals) have declined because of the scattered urban development that has materialized adjacent agricultural land in the County. There are distinct land use conflicts between new rural non-farm homes and adjacent raising of livestock because often these two types of activities are incompatible with one another.

The classification of Erie County farms by sales volume shows that the sales volume per individual farm is increasing significantly; the value of all agricultural products sold more than doubled between 1964 and 1974 from $8,673,350 to $17,609,000 and the average sales volume per farm increased from $12,426 to $28,448 over that same time period. These increases paralleled those occurring at the State level although the increases throughout Ohio were even greater than those registered in Erie County.

Within that general framework for Erie County agriculture certain specific changes have been occurring, most notably the relative decline in importance of raising livestock and livestock products, and the significant increases in certain types of agricultural cultivation, most notably cash grain crops such as feed corn, wheat and soybeans. These shifts are in evidence on the data contained in Tables 4-3, 4-4, and 4-5, which show that cash receipts for livestock and livestock products increased only nominally betweeen 1968 and 1977, whereas cash receipts for crops more than doubled over that same period (Table 4-4). The 1974 dollar values for field crops, fruits and nuts, are up sharply over corresponding figures for 1969, whereas the increased dollar values for dairy products, poultry products and other livestock products are up to a much lesser degree over the 1969-1974 time period. Much less grazing of cattle and hogs is taking place in Erie County; the chicken farms are nearly gone; and the dairy farms are fewer in number although larger in size than in certain previous years. So far as field crops are concerned the tomato crop is down in recent years as are oats and hay, whereas the cash grain crops registered the greatest increases of any of the different types of agricultural production.

Table 4-3
Erie County
FARMS BY SALES VOLUME
1964-1974

	UNDER $2,500		$2,500-$4,999		$5,000-$9,999		$10,000-$19,999		$20,000-$39,999		$40,000 & OVER		VALUE OF ALL AGRICULTURAL PRODUCTS SOLD	AVERAGE PER FARM
	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL	NUMBER	PERCENT OF TOTAL		
ERIE COUNTY														
1964	209	29.9%	96	13.8%	124	17.8%	146	20.9%	86	12.3%	37	5.3%	$ 8,673,350	$12,426
1969	269	38.3%	107	15.2%	95	13.5%	92	13.1%	85	12.1%	54	7.7%	$ 9,021,154	$12,850
1974	121	19.6%	62	10.0%	95	15.4%	127	20.5%	81	13.1%	133	21.5%	$ 17,609,000	$28,448
% CHANGE - 1964-74	-42.1%		-35.4%		-23.4%		-13.0%		-5.8%		+259.5%		+103.0%	+128.9%
STATE OF OHIO														
1964	50,985	42.4%	18,902	15.7%	20,302	16.9%	18,043	14.0%	9,040	7.5%	3,113	2.6%	$1,012,584,457	$ 8,411
1969	45,063	40.5%	17,617	15.8%	16,465	14.8%	14,645	13.2%	11,627	10.4%	5,915	5.3%	$1,246,071,615	$11,192
1974	23,135	25.1%	10,959	11.9%	14,805	16.1%	14,851	16.1%	12,679	13.8%	15,729	17.1%	$2,262,527,000	$24,551
% CHANGE - 1964-74	-54.6%		-42.0%		-27.1%		-17.7%		+40.3%		+405.3%		+123.4%	+191.9%

Source: U.S. Department of Commerce: Bureau of the Census, Census of Agriculture - Ohio, Section Two, County Reports, 1969, 1974

Table 4-4
Erie County
CASH RECEIPTS FROM FARMING
1968-1977

	(THOUSANDS OF DOLLARS)					AVERAGE DOLLARS	
	FARM MARKETINGS						
	Livestock & Livestock Products	Crops	Total	Government Payments	Total Cash Receipts	Per Farm	Per Acre
ERIE COUNTY							
1968	3,724	7,315	11,039	863	11,902	18,033	110
1977	4,036	15,871	19,907	NA	19,907	28,439	191
% Change	+8.38%	+116.96%	+80.33%	--	+67.26%	+57.71%	+73.64%
DISTRICT 2*							
1968	74,255	90,815	165,070	13,994	179,064	13,264	82
1977	68,602	230,836	299,438	NA	299,438	29,357	179
% Change	-7.61%	+154.18%	+81.40%	--	+67.22%	+121.33%	+118.29%

*District 2, as defined by the Ohio Agricultural Research and Development Center, includes Ashland, Crawford, Erie, Huron, Lorain, Ottawa, Richland, Sandusky, Seneca, and Wyandot Counties in 1968. In 1977, Ashland and Richland Counties were removed from the District.

Source: Ohio Crop Reporting Service, Ohio Agricultural Statistics, 1969

Ohio Agricultural Research and Development Center, Ohio Farm Income, 1977

Table 4-5
Erie County
AGRICULTURAL PRODUCTION BY DOLLAR VALUE
1964-1974

PRODUCTS SOLD	1964	1969	1974
All Farm Products	$8,673,350	$9,021,154	$17,609,000
All Crops	$4,863,262	$5,746,219	$12,802,000
All Livestock and Products	$2,907,190	$4,143,164	$ 4,792,000
PRODUCTS SOLD FOR FARMS WITH SALES OF $2,500 AND OVER			
Field Crops	N/A	$3,235,156	$ 9,789,000
Vegetables	N/A	$ 928,614	$ 977,000
Fruits and Nuts	N/A	$ 473,749	$ 858,000
Forest Products	N/A	$ 10,653	$ 16,000
Dairy Products	N/A	$1,750,363	$ 2,180,000
Poultry and Products	N/A	$ 484,977	$ 625,000
Other Livestock and Products	N/A	$1,853,308	$ 1,945,000

N/A - Not Available

Source: U.S. Department of Commerce, Bureau of the Census, 1974, 1969, 1964 Census of Agriculture

There is likely to be continued conflict between certain new urban development and the adjacent farm activities with the introduction of sewer collection systems into the unincorporated portions of Margaretta, Huron, Berlin and Vermilion Townships. These conflicts should be minimized through the careful formulation of a zoning strategy which calls for concentrating new urban development with relatively compact districts.

Commericial and Industrial Development

Erie County's industrial development is concentrated largely on the east-west sides of the City of Sandusky; in the northern portion of Perkins Township; at the large NASA Plumbrook facility in Perkins and Oxford Townships and within the Huron River Valley inside and immediately adjacent the City of Huron. Quarries which represents still another type of industrial activity are to be found in Groton, Margaretta, Perkins, Milan and Florence Townships and on Kelleys Island. Major rail yards are to be found in the southern portion of Groton Township and in the northwest corner of Perkins Township. Other industries are at scattered locations at Vermilion, Birmingham, Milan and Berlin Heights.

In addition to the central business districts of Sandusky, Huron and Vermilion, there are a number of community and neighborhood shopping centers within the City of Sandusky and in Perkins Township. There is a significant amount of commercial development along U.S. Route 250 between Milan and Sandusky and along Cleveland Road (U.S. Route 6) between Sandusky and Huron and, to a lesser extent, between Huron and Vermilion. Castalia, Milan, Bay View and Berlin Heights all have smaller business districts to serve their resident populations and scattered commercial development is to be found along State Route 4 and in the western half of the County and along State Route 61 in the southeastern quadrant of Erie County.

Residential Development and Housing

A review of Erie County's residential construction over the recent past, as outlined in Table 4-6, indicates that there has been more new residential lots created through lot splits (1,226) over the 1970-1980 decade than through the platting of major subdivisions (589) between 1970 and 1980. These lot splits have occurred throughout all of Erie County's townships. The highest level of activity did occur in the coastal townships plus in Florence Township. An examination of the "Existing Land Use Development" permanent wall display maps reveals a pattern of extensive "strip" residential development along numerous state highways, county roads and township roads in virtually every single township within the County. This "strip" residential development has reduced the ability of numerous county and township roads to function as trafficways and a further intensification of such scattered development will only aggravate that problem. With relatively few exceptions the bulk of this new residential development and housing has consisted of single-family dwellings

Table 4-6
Erie County
MAJOR SUBDIVISION ACTIVITY
(FIVE OR MORE LOTS APIECE)
1970-1979

YEAR	1970		1971		1972		1973		1974		1975		1976		1977		1978		1979*		TOTALS	
TOWNSHIP	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS	NO. OF SUBDV	NO. OF LOTS
Berlin									1	11	1	4									2	15
Florence																					0	0
Groton									1	4											1	4
Huron									2	11					1	14	1	4			4	29
Margaretta			1	9			1	10					1	10					1	15	4	44
Milan																					0	0
Oxford																	1	8			1	8
Perkins	2	48	3	95			3	49	3	22			1	9	4	63	6	158	3	89	25	509
Vermilion							1	10							1	8	1	30			3	48
TOTALS	2	48	4	104	0	0	5	69	7	48	1	4	2	19	6	85	9	200	4	104	37	681

MINOR SUBDIVISION ACTIVITY
LOT SPLITS (ONE TO FOUR LOTS)
1970-1979

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979*	TOTALS
Berlin	12	13	22	25	17	2	13	11	22	18	155
Florence	11	19	11	18	10	4	26	13	23	15	150
Groton	7	11	16	6	7	6	10	8	13	7	91
Huron	4	8	13	9	8	1	15	19	8	13	98
Margaretta	16	30	22	25	19	7	29	13	21	18	200
Milan	12	4	17	18	6	2	25	10	19	8	121
Oxford	6	7	10	9	11	2	11	9	16	6	87
Perkins	7	11	16	23	23	2	34	28	15	20	179
Vermilion	7	19	28	20	16	4	23	23	25	25	190
TOTALS	82	122	155	153	117	30	186	134	162	130	1271

Source: Erie Regional Planning Commission Records

Table 4-7
Erie County
MEDIAN HOME VALUE/CONTRACT RENT OF HOUSING UNITS
1960-1970

	VALUE				CONTRACT RENT			
	OWNER OCCUPIED		VACANT FOR SALE		RENTER OCCUPIED		VACANT FOR RENT	
	NUMBER	MEDIAN VALUE	NUMBER	MEDIAN PRICE ASKED	NUMBER	MEDIAN RENT	NUMBER	MEDIAN RENT ASKED
SANDUSKY								
1960	5,831	$12,100	48	NA	3,558	$64	334	$65
1970	5,968	$15,500	55	$12,800	4,114	$81	409	$79
% Change	+2.35%	+28.10%	+14.58%	--	15.63%	+26.56%	+22.45%	+21.54%
ERIE COUNTY								
1960	11,393	$12,700	165	NA	5,653	$63	518	$64
1970	16,254	$17,800	181	NA	6,768	$82	567	NA
% Change	+42.67%	+40.16%	+9.70%	--	+19.72%	+30.16%	+9.46%	--
STATE OF OHIO								
1960	1,601,752	$13,400	27,942	$16,100	903,608	$61	61,643	$61
1970	1,861,477	$17,600	16,848	$15,200	1,010,204	$83	68,156	$79
% Change	+16.21%	+31.34%	-39.70%	- 5.59%	+11.80%	+36.07%	+10.57%	+29.51%

Source: U.S. Department of Commerce: Bureau of the Census, General Housing Characteristics - Ohio, 1960-1970

although some condominium units have been constructed in Perkins and Huron Townships. The large majority of the major subdivisions created between 1970 and 1980 were established in Perkins Township (509 out of a total of 681 or 86.5%). The average lot size within these residential subdivisions ranged from about 11,000 to 15,000 square feet which translates to residential density of about 3-4 dwelling units per acre. Forty-eight new lots were established in Vermilion Township, 29 lots in Huron Township, and 44 lots in Margaretta Township.

The median home value for owner-occupied dwellings in Erie County increased from $12,700.00 in 1960 to $17,800.00 by 1970. It is estimated that the current average median home value is about $30,000.00. The median contract rent was $63.00 in 1960 and $82.00 in 1970. The estimated median contract rent value for 1980 is in the $125.00 to $150.00 range. The current range of new home costs in Erie County is from $40,000 to $150,000 and new apartment construction is generating monthly rentals of between $185.00 and $400.00. Some general observations are in order about the Erie County housing market. There is a solid demand for multiple-family rental units in Erie County and a more limited demand for condominium units for home ownership. There is a strong demand for space within the existing mobile home parks in the County, in spite of some of the problems which the series of older mobile home parks within the coastal zone have experienced because of their lack of necessary infrastructure.

The demand for single-family home construction continues to make itself felt in certain locations. Perkins Township has been the site of considerable residential development and housing in recent years and the resulting congestion is beginning to make itself felt in the marketplace; the rate of new residential construction is likely to slow down because of the impact of that congestion plus the new availablility of utilities in certain other competing locations. Huron Township remains a "prestige" area for new residential development and that factor will be an important attraction for new housing there. Margaretta Township is likely to become a much more attractive location for new residential development and housing once the collector sewer system has been extended down State Route 101 to reach Castalia and vicinity. This is likely to increase the rate at which new residential construction occurs within this general area. Vermilion Township is likely to remain an attractive locations for new housing although the rising cost of commuting, because of increased gas prices, may render this location less attractive to would-be commuters into employment centers at Lorain County and Cuyahoga County. The new housing that will occur within Groton, Oxford, Berlin, and Florence Townships is more likely to be the result of lot splits rather than the creation of major subdivisions until such time as utility lines are extended to reach the Village of Milan and the unincorporated settlement cluster of Birmingham.

There was a slight decline between 1960 and 1970 in the average household size in Erie County from 3.3 persons per household to 3.2 persons per household. It is estimated that this average household size will continue to decline over the next 20 years to reach a level of somewhere between

2.7 and 2.8 persons per household. Table 2-8 outlines the composition of Erie County households and shows that the number of single-person households is increasing. At the same time, the number of school-age children is declining.

Housing production over the 1970-1980 decade averaged about 255 units per year. Assuming an average household size of 2.8 by 1990 and 2.7 by the year 2000 it is estimated that the new housing production will average about 314 units per year over the 1980-1990 decade (895 persons/year divided by 2.85 persons per household), and to average about 462 units per year for the 1990-2000 decade (1,272 persons divided by 2.75 persons per household). The recommended areas for "low density residential", "medium density residential", "medium high density residential", and "mobile home residential" on the Official Land Use Plan and on the individual Township Land Use Plan are intended to provide sufficient land area to meet that demand for new residential construction over the coming years.

Of critical importance is to ensure a close interrelationship of future residential construction and the availability of public sewers. The need for public sewers is very great in numerous areas and there has been an extensive amount of general and detailed planning for future constuction of wastewater treatment facilities and related collection systems. The current construction of wastewater system facilities in the Sawmill Creek Planning Area and Huron Basin Planning Area will have direct impact on future residential construction within Huron Township. The extension of a wastewater collection system into Margaretta Township to reach the Castalia area and vicinity will open up sizeable lands on the western side of Erie County for new residential construction.

Some of the other "201 Facilities Planning Areas" are only in the preliminary planning stage with actual construction some years away such as in the Ruggles-Mitawanga Planning Area at Milan and within the Perkins and Plumbrook segmented facilities within the Sandusky Planning Area. The timing of sewer construction will be the single most important factor influencing where future residential development and housing occurs within Erie County and the time-staging of Erie County's Official Land Use Plan has been interrelated with certain assumptions about when that construction would actually take place.

Historical Sites and Historical Preservation

There are a total of 29 buildings and sites within Erie County that have been placed on the National Register of Historic Places which reflects the fact that these sites and buildings are of national significance by virtue of their architectural and/or historical character. Enumerated in Table 4-8 are these various sites and buildings. Over half of these sites and buildings are located in or adjacent the City of Sandusky including the Ohio Soldiers and Sailors Home in Perkins Township; the Mad River Block on West Adams Street which is a district designation; the Erie County Office

Table 4-8
Erie County
ERIE COUNTY SITES ON THE NATIONAL REGISTER OF HISTORIC PLACES

SITE	LOCATION
Cyrus Butler House	Edison Highway, Birmingham
Florence Corners School (Town Hall)	Ohio 113 at Davidson Street, Florence
Christ Episcopal Church	Park and Ohio Streets, City of Huron
Inscription Rock	Village of Kelleys Island
Kelleys Island South Shore District	Village of Kelleys Island
Ebenezer Andrews House	200 South Main Street, Village of Milan
Thomas Alva Edison Birthplace	Village of Milan
Jenkins-Perry House	37 West Front Street, Village of Milan
J.C. Lockwood House	30 Edison Drive, Village of Milan
Milan Historic District	Main and Church Streets, both sides of Front Street, and Edison Drive, Village of Milan
Mitchell Historic District	115-137 and 118-136 Center Street, Village of Milan
Abbott-Page House	2.5 miles NE of Milan on Mason Road, Milan Township
Adams Street Double House	106-108 East Adams Street, City of Sandusky
Engels and Krudwig Wine Company Buildings	220 East Water Street, City of Sandusky
Engine House No. 3	Meigs Street and Sycamore Line, City of Sandusky
Erie County Office Building	1200 Sycamore Line, City of Sandusky
Exchange Hotel	202-204 East Water Street, City of Sandusky

Table 4-8 (Continued)
Erie County
ERIE COUNTY SITES ON THE NATIONAL REGISTER OF HISTORIC PLACES

SITE	LOCATION
Follett-Moss-Moss Residences	404-414-428 Wayne Street, City of Sandusky
Lake Shore and Michigan Southern Railroad Depot	North Depot Street at Carr Street, City of Sandusky
Mad River Block	1002-1018 West Adams Street, City of Sandusky
Rush R. Sloane House	403 East Adams Street, City of Sandusky
St. Mary's Catholic Church	429 Central Avenue, City of Sandusky
Sycamore School	3rd and Sycamore Streets, City of Sandusky
Water Street Commercial Buildings	101-165 East Water Street and 101-231 West Water Street, City of Sandusky
Samuel M. White House	304 East Adams Street, City of Sandusky
Erie County Infirmary	Columbus Road, Perkins Township
Ohio Soldiers and Sailors Home	Strub Road between Columbus and Milan Avenues, Perkins Township
Vermilion Town Hall	736 Main Street, City of Vermilion

Source: Federal Register

Building and the Carnegie Library. The Village of Milan is the location of six different designated areas including Thomas Edison's birth place, the Milan Historic District and the Mitchell Historic District. Other designated sites are at Vermilion (the Town Hall), Kelleys Island (Inscription Rock and South Shore District), Birmingham and Florence. In addition to these buildings and sites on the National Register there are two Centennial homes as designated by the Ohio Historical Society; to be eligible for this designation the home and adjacent land must have remained within the same family for over 100 years. The two local area Centennial homes are the Willard Knapp homestead at 5124 Maple Avenue in Castalia and the Starr Truscott home in the unincorpoated settlement cluster of Birmingham at the intersection of State Route 113 and State Route 60. These historic sites should be preserved and specific mention will be made of them on the Official Land Use Development Plan in order to recognize their importance in the land use planning for conservation as well as new development within Erie County.

Urban Settlement Pattern

The pattern of urban settlement in Erie County has been importantly influenced by the County's geographical location adjacent Lake Erie. Sandusky, the County Seat and the largest city, has its origins as a British Fort constructed to enable British troops to protect the strategic entrance into Sandusky Bay and to serve as a link in a series of forts that extended from Pittsburgh up through Detroit. The other two cities in Erie County, Huron and Vermilion, are also located along the Lake Erie shoreline and at the mouths of the rivers with which they share their names. Historically, almost all of the County's new urban growth and development has taken place in close proximity to the Lake Erie shoreline. The major highway network and railroad network roughly paralleled the coast line (e.g. State Route 2, Ohio Turnpike, Conrail right-of-way) and the highways and railroads which extended in a north-south direction typically radiated outward from the three coastal cities. A number of settlements have emerged from other locations along the shoreline including the Village of Bay View, Margaretta Township and unincorporated settlment clusters such as Whites Landing and Crystal Rock in Margaretta Township and Oberlin Beach, Ruggles Beach, Mitiwanga, Heidelberg Beach, Beulah Beach, Orchard Beach, and Bluebird Beach between U.S. Route 6 and Lake Erie in the general area between Huron and Vermilion. The Villages of Castalia, Milan, and Berlin Heights were established in the interior along State highways and other smaller unincorporated clusters have emerged at strategic crossroad locations in Florence, Oxford, and Groton Townships.

Recreation-Oriented Development - Residential and Commercial

A considerable amount of commercial and residential development in Erie County is oriented towards recreation activities of one kind of another. The largest of these, of course, is at Cedar Point Amusement Park which attracts over 2,000,000 visitors annually and which supports a whole

series of motels, restaurants, gasoline stations and related facilities in the City of Sandusky and within Perkins Township. Tourism represents a major industry within Erie County. The fishing, boating, and hunting opportunities are abundant as well as various tourist attractions within or adjacent the County, such as Cedar Point, the Blue Hole at Castalia, Kelleys Island, Bass Island, Put-In Bay, and the various ODNR wildlife areas.

In addition, there are a number of residential areas along the Sandusky Bay shoreline in Margaretta Township that accommodate recreation-oriented residential development, including Whites Landing, Crystal Rock and Bay View. Some limited amount of commericial development is to be found at Bay View. Much of the coastal zone area between Huron and Vermilion consists of older recreation-oriented residential and commercial development at Ruggles Beach, Mitiwanga, Volunteer Bay and Orchard Beach. Many of these single-family residential areas and mobile home parks have their own beaches along Lake Erie and what were originally constructed as seasonal vacation homes with increasing frequency have been converted for year-round occupancy. This has generated some problems inasmuch as these areas were typically built at a much earlier point in time and do not have the necessary sewers to handle such occupancy.

Public Parkland and Quasi-Public Recreational Facilities

The State-wide Comprehensive Outdoor Recreation Plan contains an inventory both public and quasi-public recreation facilities and this summary inventory has been included in this report as Table 4-9. There exists at present a total of 8,314 acres devoted to such recreational use which represents 4.8% of the Erie County's total land area of 174,008 acres. Margaretta Township is the site of a number of public and quasi-public recreation facilities including the 613-acre Lagoon Deer Park south of Bay View; the 399-acre Castalia Farms owned by Owens-Illinois Corporation operated as a pheasant farm; the 400-acre Millsite Farm southwest of State Route 2 which is a trout farm also owned by Owens-Illinois; the 127-acre Castalia Trout Club inside the Village of Castalia; and the 58-acre Crystal Caves Park between Bay View and Castalia which is a camp ground. The Cedar Point Amusement Park and travel park occupy 415 acres in the City of Sandusky on the peninsula of land extending out between Sandusky Bay and Lake Erie itself. Huron Township is the site of the 496-acre Thunderbird Hills Golf Club just south of the City of Huron; the 173-acre Sawmill Creek Golf Course and resort complex , the 71-acre Huron River Valley Camp just south of Huron; the 64-acre Sheldon's Folly Wildlife Reserve of ODNR adjacent the Sawmill Creek Golf Course; and the 108-acre Keys Golf Course between Sandusky and Huron on Boos Road. Vermilion Township is the site of the 123-acre Vermilion Fish and Game Association landholding southwest of Vermilion on Thompson Road; the 113-acre Willow Creek Golf Course south of Vermilion; and the Erie County Conservation League on a 64-acre site within the City of Vermilion. Finally, the Girl Scouts' Camp Timberlane occupies a 325-acre site in the southeast corner of Florence Township.

Table 4-9
Erie County
SUMMARY INVENTORY OF PUBLIC AND QUASI-PUBLIC RECREATION FACILITIES
1979

TYPE AND/OR SIZE FACILITY	PRIVATE	PUBLIC	COUNTY TOTAL
Total Acres	4,131	4,183	8,314
Land Acres	3,795	3,286	7,081
Water Acres	336	897	1,233
Family Camp Acres	214	17	231
Family Camp Sites	1,429	125	1,554
Day Camp Acres	25	0	25
Resident Camp Acres	21	0	21
Picnic Acres	103	30	133
Picnic Tables	2,431	359	2,790
Playground Acres	2,029	24	2,053
Golf Holes	60	0	60
Golf Acres	323	0	323
Driving Range Acres	21	0	21
Tennis Courts	8	16	24
Track Length	0	0	0
Ball Diamonds	7	22	29
Horseshoe Courts	23	9	32
Shuffleboard Courts	20	5	25
Basketball Goals	21	24	45
Football Acres	20	11	31
Soccer Acres	3	0	3
Volleyball Courts	12	4	16
Badminton Courts	8	0	8
Hiking/Walking Trail Mile	8	3	11
Orr Trail Miles	0	0	0
Bike Trail Miles	0	0	0
Water Trail Miles	1	0	1
Fitness Trail Miles	0	0	0
X-Country Ski Miles	5	0	5
Bridle Trail Miles	0	0	0
Number of Horses	0	0	0
Shooting Range Acres	16	0	16
Hunting Acres	881	3,002	3,883
Natural Area Acres	1,791	388	2,179
Boating Acres	111	269	380
Boating Ramps	40	4	44
Fishing Acres	282	307	589
Fishing Shore Feet	923,818	50,784	974,602
Swimming Pool Sq. Ft.	20,000	0	20,000
Public Beach Shore Feet	9,255	5,300	14,555
Swimming Area Sq. Ft.	499,598	30,150	529,748
Public Access to Water	3	0	3
Ski Slopes	0	0	0
Sledding Acres	13	3	16
Ice Skating Acres	0	8	8
Handicapped Facilities	5	1	6

Source: Ohio Department of Natural Resources, Statewide Comprehensive Outdoor Recreation Plan, Recreational Facility Inventory

Other major public parklands in the County include Kelleys Island State Park, which encompasses 659 acres on Kelley's Island; the 296 acre Milan Wildlife area of ODNR; the 25-acre Galpin Wildlife Area of ODNR at Milan; the 2,138-acre Resthaven Wildlife area on the west side of Margaretta Township; the 604-acre Willow Point Wildlife area of ODNR; the 5-acre Fireland Community Park and 1-acre Florence Township Park, both within Florence Township; and the 7-acre Edison Park in Milan Township.

Major Public Lands

The single largest public landholding is the NASA Plumbrook Facility encompassing portions of Perkins, Oxford and Milan Township. This Federal facility occupies a total of some 5,400 acres and is the site of a wide variety of facilities. The United States Government purchased the first 500 acres of what was to become the NASA Plumbrook Facility during World War II and erected a munitions plant on the site. With the advent of the National Aeronautics and Space Administration (NASA) in the late 1950's, the government purchased more land, demolished the munitions plant and established a research and testing facility for NASA. At its largest, the NASA site included approximately 5,400 acres inside a circumferential fence and 2,600 acres outside the fence. The bulk of the land outside the fence was leased to local farmers with the stipulation that it be used for agricultural purposes only.

Prior to 1973, when the Federal Government withdrew most of the space program's funding, the Plumbrook Facility was used extensively as a research facility. Rocket engine and fuel testing accounted for most of the activity, along with a small nuclear reactor erected on the site. Among the facilities located on the site were:

1. The nuclear reactor which was shut down in June, 1973.
2. The Space Power Division, which was the site of the rocket engine and fuel testing program. The Space Power Division was shut down in June, 1974.
3. A vacuum chamber which was shut down in October, 1975. This chamber is one of the two largest in the free world.
4. A 100 kw experimental wind turbine generator which is still operational.
5. Fifty-four miles of roads.
6. A 5,000 foot paved airfield.
7. A noise testing facility, used by the U.S. Environmental Protection Agency to establish acceptable noise levels for all types of engine and motors.

Total public investment in the site and its facilities exceeded $120 million. At present, NASA maintains the Plumbrook Facility on a standby basis, with a five-person skeleton crew assuming a caretaking function. NASA also maintains the experimental wind turbine generator monitoring its operation, and occasionally performs some small-scale fuel testing experiments.

In addition to the limited NASA operations, several other groups currently use the Plumbrook site on a day-to-day bsis. Among these are:

1. The U.S. Army Reserve, which has two people on the site full-time and approximately 150 on weekends.

2. The Federal Bureau of Investigation, which has its Sandusky Office in the NASA administration building.

3. The U.S. Coast Guard maintains one of its LORAN Great Lakes Navigational System beacons on the site.

4. The Ohio Army National Guard uses the grounds extensively for manuevers.

5. The Ohio Air National Guard uses the airstrip for manuevers.

6. The U.S. Department of the Interior does blackbird research and also studies animal-related crop damage.

In addition, to the various governmental agencies which use the site at present, the Garrett Corporation of California has taken a five to eight year lease on the former Space Power Division. Garrett manufactures gas centrifuges used in the enrichment of uranium.

The U.S. EPA has recently taken title to the 645 acres occupied by its noise testing facility. This land, deemed as being surplus by NASA, was transferred to the EPA in recognition of its long-time usage of the property and the large capital investment the EPA had there.

NASA has recently decided to divest itself of approximately 1,450 acres of the facility which it no longer uses (in addition to the 645 acres transferred to the EPA) and will sell the land to private individuals or corporations. Roughly half of the land, located along the western and southwestern borders of the NASA property, will be sold with the provision that it be used only for agricultural purposes. The remaining half, located along the southern border of the NASA site, will be sold with no restrictions.

Within the next several years, NASA plans several changes on the portion of the Plumbrook Facility remaining under its control. Two new wind turbine generators will be erected in 1980 to complement the existing generator and a windmill blade testing facility will be established in the former reactor service buildings. The reactor itself is scheduled to be dismantled and the grounds cleared of radioactivity beginning in 1981.

The Ohio Agricultural Experimental Station is located on some 361 acres (much of it wetland) at the western extremity of Margaretta Township. The Oakland Cemetery, the Ohio Soldiers and Sailors Home and the Erie County Board of Education property on Campbell Street are the major public lands in Perkins Township besides the NASA facility described above. There are a large number of rural churches and cemeteries at scattered locations throughout Erie County but none of these is sufficiently large unto itself to warrant description here. The Sandusky Municipal Airport lies largely within the City of Sandusky on a site bounded by U.S. Route 6 and Lake Erie. The only other airports are the Kelleys Island Municipal Airport, which provides the primary means for village residents there to reach the mainland, and the Huron Airport, a small facility for private aircraft located on Boos Road in Huron Township. The Ortner Airport has ceased operations in Florence Township in the southeast corner of the County.

Prevailing Development Pattern of Individual Townships

Margaretta Township:

Margaretta Township is the western-most of all the coastal townships and is the largest township in Erie County with a total of 23,049.1 acres or 13.2% of the County's total land area as outlined on Table 4-10, Land Area By Township and Municipality. The bulk of the Township's land base is rectilinear in shape except for the triangular shaped land mass that juts out into Sandusky Bay. A considerable percentage of the northern half of Margaretta Township consists of floodplain, including almost all of the area north of U.S. Route 6 and east of State Route 269 between the City of Sandusky's corporate line and the Village of Bay View; all of the land to the east and northeast of Crystal Rock; most of the land bounded by Oxbo Road/State Route 269/U.S. Route 6/western county line; and fingers of land along Cold Creek, the Brown-Kuebeler Ditch, Mills Creek and one of its tributary streams in the southeastern portion of the Township. A large concentration of wetlands is to be found immediately south, east, and southeast of Bay View and at scattered locations within the Resthaven Wildlife Area and between Wall Road and Sandusky Bay shoreline west of Bruner Road. There are a few major woodlots at scattered locations within the Township, within ODNR's Resthaven Wildlife Reserve and at Owens-Illinois Pheasant Farm (Castalia Farms). Cold Creek and Mills Creek are the main drainageways and they flow northeasterly into and through the City of Sandusky to empty eventually into Sandusky Bay.

The Village of Castalia and the 2138-acre Resthaven Wildlife Area occupy much of the west central portion of Margaretta Township. The Westside Neighborhoods of the City of Sandusky, the floodplain lands and wetlands between Sandusky and Bay View, the Village of Bay View, and the Castalia and Millsite Farms take up much of the northern portion of Margaretta Township. Much of the Westside of the City of Sandusky consists of vacant, undeveloped land at the present time. Considerable "strip" residential development has occurred along State Route 412/101 both to the southwest and northeast of the Village of Castalia; along U.S. Route 6 through the northern half of the Township; along and adjacent Bogart, Billings, Parker, and Mason Roads; and east of Bay Village along the Sandusky Bay shoreline. The two unincorporated settlement clusters of Whites Landing and Crystal Rock also contain dense residential settlement.

The major features of the Township's road network are as follows. The State Route 2 Bypass extends around the West Side of the City of Sandusky and continues northward past the Village of Bay View and over the viaduct to reach the eastern portion of Ottawa County . The major north-south routes includes State Route 269, Maple Avenue and Bardshar Road, all three of which terminate at U.S. Route 6 which is the main east-west connection through the Township. The combination of Heywood Road, Baumgardner Road also traverses the Township in this direction but this route contains a number of jogs.

Table 4-10
Erie County
LAND AREA BY TOWNSHIP AND MUNICIPALITY

	LAND AREA	
	NO. OF ACRES	PERCENTAGE OF COUNTY TOTAL
BERLIN TOWNSHIP	20,005.4	
Village of Berlin Heights	733.4	
Total	20,738.8	11.9%
FLORENCE TOWNSHIP	17,300.0	9.9%
GROTON TOWNSHIP	17,030.0	9.8%
HURON TOWNSHIP	16,254.5	
City of Huron	3,272.5	
Total	19,527.0	11.2%
MARGARETTA TOWNSHIP	22,231.7	
Village of Bay View	170.9	
Village of Castalia	646.5	
Total	23,049.1	13.2%
MILAN TOWNSHIP	16,794.2	
Village of Milan	434.8	
Total	17,229.0	9.9%
OXFORD TOWNSHIP	16,934.0	9.7%
PERKINS TOWNSHIP	17,780.0	10.2%
VERMILION TOWNSHIP	14,085.8	
City of Vermilion	1,191.9	
Total	15,277.7	8.8%
CITY OF SANDUSKY	6,270.2	3.6%
KELLEYS ISLAND	2,872.4	0.2%
ERIE COUNTY TOTAL	174,008.2 Acres	100.0%

Source: Erie Regional Planning Commission, Land Capability Report

Margaretta Township (Continued)

There are, in addition, a number of roads which radiate outward from the City of Sandusky, including State Route 101 to the southwest, State Route 6 to the west and Heywood Road-Thicket Road to the west. The Township's land base has been cut up by the relatively extensive number of railroad rights-of-way, highways and roads, is characterized by relatively poor drainage and shallow-depth to bedrock and also by a large lack of general utilities for the pockets of urban development that have materialized in recent years.

The Owens-Illinois Company owns and operates two private recreation facilities for business purposes; these include the 399-acre Castalia Farms which is utilized for pheasant hunting, and the 400-acre Millsite Farm, which is utilized as a trout farm. The Blue Hole, located in Castalia, is a major tourist attraction which is heavily advertised along the highway network throughout northern Ohio, and attracts a sizable number of visitors annually.

Perkins Township:

Perkins Township is an inland township located immediately south and adjacent the City of Sandusky. This square shaped township occupies a total of 17,780 acres or some 10.2% of the County's land base (Table 4-10). Perkins Township is very close in size to many of the townships in the County (Florence, Groton, Milan and Oxford). The major natural features within the Township are Pipe Creek which originates a short distance south of the State Route 2 Bypass traverses through the center of the Township in a largely north-south direction and continues for a total length of about twelve miles into and through the City of Sandusky to empty into Sandusky Bay near the entrance to the Cedar Point Causeway. The total drainage area of the Pipe Creek basin is some 28.6 square miles. The terrain is essentially flat within Perkins Township and there exists relatively few woodlots in the Township outside of the NASA landholding. Mills Creek traverses the western side of Perkins Township, and crosses into and through the City of Sandusky to empty into Sandusky Bay near the coal loading docks on the west side of City. A series of drainage ditches also pass through portions of the eastern half of Perkins Township including Taylor Ditch, Storrs-Hemminger Ditch, Cobb Ditch, Plumbrook and Lindsley Ditch.

Major land uses within Perkins Township include the NASA Plumbrook Facility which covers most of the southern half of this Township. The Norfolk and Western Railroad yard in the northwest corner of the Township, the Wagner Quarry along U.S. Route 250 south of Strub Road, the Sandusky Shopping Mall along U.S. Route 250 opposite the Wagner Quarry, the Oakland Cemetery and the Ohio Soldiers and Sailors Home, both of which lie between U.S. Route 250 and Columbus Avenue northeast of the Wagner Quarry and the Sandusky Shopping Mall, and the finally the General Motors New Departure

Perkins Township (Continued)

Hyatt Bearings plant at the intersection of State Route 4 and Perkins Avenue in the northwest part of the Township.

Commercial development is concentrated along the southside frontage of Perkins Avenue; at scattered locations along U.S. Route 250 frontage and in the immediate vicinity of the U.S. Route 250-State Route 2 Bypass Interchange. Some commercial development is beginning to emerge along the State Route 4 frontage to the south of Perkins Avenue. Industrial development has been located primarily along the northern edge of the Township to date. Residential development and housing has materialized largely within the northeast quadrant of Perkins Township and along the State Route 4 and Bogart Road frontages with secondary "strip" housing along a series of roads in the southern half of the Township to the south of Bogart Road. So much new residential development and housing has taken place in Perkins Township over the last ten to twenty years that that general area has begun to become a bit congested from a traffic standpoint and this traffic congestion threatens to detract somewhat from the desirability of living in this general location although the availability of a wide range of goods and services and ready accessibility to a large percentage of the County's jobs will continue to make this area an attractive location.

The Township's road network is characterized by a series of major thoroughfares which radiate outward from the City of Sandusky, including U.S. Route 250 and Columbus Avenue to the southeast, Campbell Street to the south and River Road and State Route 4 to the southwest. There are three primary east-west routes including Scheid Road on the southern border of the Township, Perkins Avenue on the northern border and Bogart Road traversing through the middle section of the Township. The orderly development of the minor street network should be a priority concern as future growth and development occurs in this general area. Still another important consideration is to affect a clear and effective transition between the substantial areas of commercial and industrial development and adjacent housing. The ultimate re-use of the Wagner Quarry property certainly represents an opportunity area in Perkins Township.

Huron Township:

Huron Township is one of the coastal townships in the north-central portion of Erie County. This particular township is almost triangular in shape because of the configuration of the Lake Erie shoreline and contains a total of some 19,527 acres or 11.2% of Erie County's total land area (Table 4-10). The estimated 1980 population for Huron Township is some 10,250 persons, up an estimated 18.6% over the 1970 figure. Huron Township is the location of a number of environmentally sensitive areas including extensive wetlands within and adjacent Sandusky Bay in the vicinity of the Cedar Point Chaussee and adjacent the Sawmill Creek recreation complex and also within the Huron River Valley, both inside and immediately south of the City of Huron. The Ohio Department of Natural

Huron Township (Continued)

Resources owns and manages several important facilities in these areas including the Sheldon's Folly Wildlife Reserve adjacent Sawmill Creek, the DuPont Marsh south of the City of Huron. In addition to these public lands and environmentally sensitive areas, there are a series of public parkland and quasi-public recreation facilities in the township including the 496-acre Thunderbird Hills Golf Club on the southern edge of Huron, Plumbrook Country Club which occupies 130 acres along Plumbrook between Hull Road and Perkins Avenue, the 71-acre Huron River Valley Camp just south of Huron, and the 108-acre Keys Golf Course along Boos Road south of State Route 2 Bypass, plus the Osborn County Park located on the old State Farm property. Other major public lands are the Firelands College of Bowling Green State University along Boos Road and Rye Beach Road and the Restlawn Memorial Park Cemetery on the south side of Bogart Road.

The City of Huron occupies about one-fourth of the total land area of Huron Township and approximately half of the Township's Lake Erie shoreline. The City's central business district has been redeveloped over the past ten years or so and a spoils disposal area established adjacent the Port area. Industrial development is concentrated along the Huron River valley adjacent the Norfolk & Western Railroad right-of-way and in the newer Huron Industrial Park adjacent the State Route 2-Rybeach Road interchange. Many of the City's residential neighborhoods are oriented to the Lake Erie shoreline by means of a series of north-south streets extending inland from the waterfront. There remains a considerable amount of vacant land in the southwestern and southeastern portions of the community. A limited amount of commercial development has stripped out along Cleveland Road (U.S. Route 6) between the City of Huron and the City of Sandusky. There are a few other commercial establishments at scattered locations along Hull Road, U.S. Route 250 and adjacent the corporate limits to the southwest and east of the City (Anderson Beach area). "Strip" residential development is to be found along adjacent Galloway Road, Hull Road, Boos Road, Bogart Road, Huron Avery Road, and to a lesser extent, along several other highways and roads within the Township.

The major natural features in the Township include the Sandusky Bay and Huron River Valley wetlands, the Huron River bottomlands and adjacent tree cover, the Sawmill Creek drainage basin, Plum Brook in the northwest corner of the Township, and a whole series of drainage ditches tributary to Lake Erie, most of which empty into Lake Erie between Huron and Sandusky and several of which have their outlets in the Chaska Beach and Anderson Beach area. The Sawmill Creek drainage basin encompasses a total of about 13.8 square miles and the Huron River Valley, only a small portion of which actually lies within Huron Township, extends a total length of approximately 60 miles and encompasses a drainage area of some 403 square miles, making it by far the largest drainage basin in the entire county. There are only a few very small pockets of tree cover related to the Sawmill Creek drainageway and several stands of woodlots adjacent Mud Brook and the Huron River.

Huron Township (Continued)

The bulk of the agricultural land in Huron Township consists of "prime" agricultural land. Some of the best farmland in Erie County is located in this general vicinity.

Huron Township is traversed by a relatively large number of highways and local roads. Cleveland-Sandusky Road (U.S. Route 6) roughly parallels the Lake Erie shoreline, as does the State Route 2 Bypass which enters the City of Huron from the east. A number of thoroughfares radiate outward from the City of Huron including State Route 13 and River Road to the south, Huron-Avery Road to the southwest, Berlin Road to the east and Bogart Road to the west. In addition, U.S. Route 250 slices through a piece of the southwestern corner of the Township.

Both the City of Huron and Huron Township are perceived in the local area housing market to be highly desirable places in which to live. Housing demand has been relatively strong in recent years in the Bogart Road area of the Township. With the introduction of sewer collection system into portions of the Huron area within the near future, there is likely to occur some intensification of the rate at which new residential construction occurs in this vicinity.

The creation of the Old Woman Creek National Estuarine Sanctuary along the eastern edge of Huron Township and extending well into Berlin Township, will have some impact on the immediately adjacent lands and the land use planning for those areas. The existence of four golf courses in Huron Township assures that there will be significant amount of open space in the coming years but as residential development intensifies, there may be a need for certain additional parkland to meet the needs of Township residents.

Berlin Township:

Berlin Township is included as one of Erie County's coastal townships although the majority of its land base is located inland well into the interior and about half the Township's land area actually is located south of the Ohio Turnpike. Only the "neck" of the Township extends northward to reach the Lake Erie shoreline. Berlin Township encompasses a total of 20,738.8 acres, or 11.9% of Erie County's total land area (Table 4-10), making it the second largest of the County's townships. Berlin Township is the only township in Erie County that stretches all the way from the northern edge of the County at Lake Erie to the southern edge of the County. The estimated 1980 population for Berlin Township is 3,190 persons, up 4.6% over the 1970 population figure. Old Woman's Creek extends through the western portion of the Township and empties into Lake Erie. The Old Woman's Creek drainage area totals about 26.6 square miles. The Ohio Department of Natural Resources has established a wildlife reserve on the 510-acre Old Woman Creek National Estuarine Sanctuary site in the northwestern corner of Berlin Township. The facility consists only of staff quarters, a small biological laboratory, and the wetland area

Berlin Township (Continued)

itself. Although ODNR intends the facility primarily as a research and scientific site, visitation has averaged three to four hundred persons per month since full-time staff located there in January, 1979. These visitors have mostly been school groups and the like, as ODNR does not plan to open the preserve to the general public.

There is a fairly extensive amount of forest cover largely related to the Old Woman's Creek valley and tributary streams thereto plus a major concentration of forest cover north of Mason Road and east of Ceylon Road. The terrain in Berlin Township is largely flat to gently rolling, and the bulk of the Township's land base is devoted to agricultural pursuits. The agricultural land within Berlin Township is mixed in character; the land area to the north of the Norfolk & Western Railroad right-of-way and along the western edge of the Township consists of "prime" agricultural land whereas the remaining agricultural lands to the south, southeast, east and northeast of the Village of Berlin Heights are classified as being somewhat less productive.

The Ohio Edison Company has aggregated a 1,740-acre landholding bounded by Ceylon Road to the west, Mason Road to the south, Frailey Road to the east, and the Norfolk & Western Railroad right-of-way to the north; this land has been assembled for the purpose of constructing a nuclear electric generating station to serve not only Ohio Edison Company, but also a consortium of other Ohio and Pennsylvania utilities. The recent announcement that plans have been cancelled for the construction of this nuclear electric generating station have left the future usage of this large landholding somewhat in doubt. This site does contain the greatest concentration of forest cover within Berlin Township and, should the land not be required for utility company operations, then the feasibility of acquiring this landholding for parks and recreation purposes (perhaps as a state park facility) should be explored.

The Township's thoroughfare network consists primarily of east-west roads including U.S. Route 6, which ranges within 120 feet to 4,500 feet of the Lake Erie shoreline; Darrow Road also through the northern "neck" of the Township; Mason Road and the Ohio Turnpike through the middle section of the Township; and State Route 113 across the southern portion of the Township. Ceylon Road is the only uninterrupted north-south route to pass through the entire length of the Township, although there are several combinations of roads with jogs on the eastern and western sides of the Township. An underground pipeline of the Columbia Gas Company passes through just to the south of the Village of Berlin Heights and an overhead transmission line traverses the Township east-west just north of Knight Road. The Conrail right-of-way traverses east-west through the "neck" of the Township and the Norfolk & Western Railroad right-of-way also passes through the Township in an east-west direction.

The Village of Berlin Heights is an older established settlement, the majority of its housing being located either along Ceylon Road or Main Road. A considerable amount of vacant, undeveloped land remains within the corporate limits in the general area north of State Route 113 between

Berlin Township (Continued)

Ceylon Road and Bellamy Road. There exists a series of older settlements between U.S. Route 6 and the Lake Erie shoreline, including the Oberlin Beach and Ruggles Beach areas including several different mobile home parks there. Some of this older area has experienced problems due to inadequate streets and sewage disposal. Some "strip" residential development is to be found along State Route 113, State Route 61, southern portion of Arlington Road, along some stretches of Mason Road, along Church Road, and to a lesser extent, along other roads within the Township. There are scattered commercial and industrial establishments to be found mainly along State Routes 113 and 61 and the Norfolk & Western Railroad right-of-way.

There are some inland wetlands, not only within the Old Woman Creek National Estuarine Sanctuary but along several or adjacent several tributary streams much further upstream within the overall drainage basin, and near the headwaters of Cranberry Creek.

Much of the Berlin Township's future development potential has depended upon two factors: (1) the anticipated construction of the Berlin Heights Electric Generating Station which now has been cancelled, and (2) the extension of a sewage collection system from the wastewater treatment plant on the east side of the City of Huron. The impact of the cancellation of construction plans for the electric generating station on this projected sewer construction remains to be seen.

Vermilion Township:

Vermilion Township is one of the major coastal townships in Erie County. This Township is located in the northeastern corner of Erie County and is close to being triangular in shape because of the configuration of the Lake Erie shoreline. Vermilion Township contains a total of 15,277.7 acres, or 8.8% of Erie County's total (Table 4-10). The City of Vermilion occupies the far northeastern corner of the Township but this incorporated land area is only a small percentage of the Township's total land base. The remainder of the Township is largely rural and agricultural in character except for the coastal zone which is largely developed with a wide variety of single-family homes and cottages, mobile home parks, camp sites and scattered commercial establishments. Vermilion Township's 1980 population is estimated to be 9,720 persons and the City of Vermilion is estimated to have a 1980 population of 6,100, which indicates that there are nearly twice as many people resident within the City of Vermilion as in the entire rest of Vermilion Township. Over the 1970-1980 decade, however, the population growth in the unincorporated portion of the Township actually exceeded that which occurred within the City of Vermilion (plus 674 persons in the unincorporated area versus plus 600 persons within the corporate limits). This proliferation of "strip" residential development

Vermilion Township (Continued)

along many of the county and township roads has occurred in part because of the improved accessibility by way of State Route 2 to major employment centers in Lorain County and in Cuyahoga County. A lot of "strip" residential development is to be found along much of the State Route 60 frontage north of Mason Road, along Furnace Road and Darrow Road, and along a whole series of north-south roads such as Barnes, Risden, Coen, Cemetery, and Joppa. There exists a great deal of commercial activity interspersed among the residential development and housing and mobile home parks within the coastal zone. The 113-acre Willow Creek Golf Club is located between Darrow Road and State Route 2 to the east of State Route 60, and the 123-acre Vermilion Fish and Game Association landholding is north of Thompson Road between Coen Road and State Route 60.

A whole series of relatively small drainageways pass through all or portions of Vermilion Township and empty into Lake Erie including Rigo Ditch and Fichtel Ditch, Chappel Creek, Sugar Creek, Darby Creek, Sherod Creek, and Edson Creek. The Chappel Creek drainage basin is the largest of this group and it encompasses a drainage area of some 24 square miles. Extensive forest and tree cover is to be found in Vermilion Township, perhaps the greatest concentration anywhere in Erie County. A large majority of this forest cover is located south of State Route 2, both north and south of Darrow Road. The Vermilion Fish and Game Club's 123-acre site on Thompson Road encompasses one large piece of that forest cover. There are also smaller amounts of tree cover to be found along the various creeks and smaller streams tributary to Lake Erie (e.g., along Chappel Creek, Sugar Creek, Darby Creek and Edson Creek). While there are certain agricultural lands still remaining within Vermilion Township, the sizes of these farms appear to be smaller on the average than in most other places in Erie County and the lands to the south of the Norfolk & Western Railroad right-of-way are classified as being less productive than those to be found between that railroad right-of-way and the Lake Erie shoreline.

The orientation of the Township's road network has been heavily influenced by the configuration of Lake Erie's shoreline. State Route 2, the Conrail right-of-way, the Norfolk & Western Railroad right-of-way, the new State Route 2 and Furnace Road-Darrow Road all parallel the Lake shoreline. There are in addition a series of fairly closely spaced north-south roads which extend through most of the Township including Frailey Road, Joppa Road, Barnes Road, Risden Road, and State Route 60 on the west side of the Township which interconnects the City of Vermilion with the unincorporated settlement cluster of Birmingham in the southeastern corner of the County. Overhead electric transmission lines cut across the southeast corner of the Township.

As described above, Vermilion Township has experienced relatively rapid growth over the past decade. An influx of a considerable amount of new housing has largely stripped out along the roadside frontages and has impinged the agricultural lands on the interior. Landholding pattern is cut up in many locations. The preservation of certain portions of the

Vermilion Township (Continued)

major forest cover would appear to be an important priority item, as is the upgrading of the older coastal zone development, which is badly in need of certain public utilities and other improvements. This will become increasingly important as additional residential and commercial infilling takes place.

There are some opportunities for industrial development in the vicinity of the two railroad rights-of-way. The attractiveness of these locations for industrial development should be enhanced by their proximity to the State Route 60 interchange with new State Route 2. It remains to be seen what impact the continued rising price of gasoline will have on the attractiveness of Vermilion Township for residents who commute into Lorain County or Cuyahoga County for employment.

Groton Township:

Groton Township is an inland township in the southwestern corner of Erie County. This Township is essentially square-shaped and contains a total of 17,030 acres or 9.8% of the County's total land base (Table 4-10). Groton Township is predominantly agricultural in character and the Township contains no incorporated communities within its boundaries. The Sand Hill unincorporated settlement cluster and the Parkertown unincorporated settlement cluster are among the few pieces of residential development to be found throughout the Township. Most of the scattered pockets of rural non-farm housing are to be found within the northeast quadrant of the Township, along Strecker Road through the middle of the Township, and along State Route 269 on the western side of the Township. The agricultural land within Groton Township varies with most of the western half of the Township and the southeastern quadrant of the Township consisting of "prime" agricultural land, and the bulk of the northwest quadrant contains land that is classified as less productive for agricultural purposes. It is expected that agriculture will continue throughout the Plan period to be the main economic activitiy within Groton Township.

Terrain in the Township is relatively flat and Mills Creek and Pipe Creek and their tributary streams are the main drainageways to be found here. There are relatively few woodlots in Groton Township and most of them are located in the northern half of the Township.

The two major land uses besides farming are: (1) the large Norfolk and Western Railroad yard on the southern edge of the Township adjacent State Route 4, and (2) the Sandusky Crushed Stone Company quarry in the center of the Township south of the Ohio Turnpike between Maple and Billings Roads.

The Township's thoroughfare network consists of the Ohio Turnpike traversing the northern half of the Township in an east-west direction, State Route 4 following a northeast-southwest alignment and State Route 269

Groton Township (Continued)

passing through the western side of the Township from south to north. In addition, Strecker Road bisects the Township along an east-west access. In addition, an underground pipeline follows an alignment a short distance to the north of the Ohio Turnpike right-of-way.

The estimated 1980 population for Groton Township is 1,160 persons which is up 9.8% from the 1970 figure. This means that the residential construction on the various lot splits that took place over the 1970-1980 decade (88) more than made up for whatever loss in rural farm population due to farm consolidations. This pattern is expected to continue over the Plan period (1980-2000). Groton Township's general lack of accessibility onto the Ohio Turnpike, and lack of utilities combined with the limitations of its soils for new home sites in many locations will serve to limit the amount of new residential development and housing that might be expected over the next ten to twenty years.

Oxford Township:

Oxford Township is an inland township in the south-central portion of Erie County. This square-shaped township contains a total of 16,934 acres or some 9.7% of the County's land base (Table 4-10). The estimated 1980 population for Oxford Township is 1,280 persons which is about on the same level as Groton Township. These two are the most rural townships with the least amount of urban development contained within them. As in the case of Groton Township, the Ohio Turnpike traverses east-west across the northern half of this Township. The NASA Plumbrook Facility pre-empts the northern edge of the Township's land base although certain of these lands are scheduled to be disposed of by the Federal government as surplus property in the very near future.

The terrain is quite flat throughout Oxford Township and two major drainageways pass through separate corners of the Township - Pipe Creek cutting across the northwestern corner and the West Branch Huron River meandering through the southeastern corner of the Township. In addition, there are a whole series of small drainage ditches throughout the entire middle section of Oxford Township. There is limited tree cover to be found within the Township and most of it is located along a stream tributary to the West Branch of the Huron River in the southeastern quadrant of the Township. Oxford Township consists primarily of rich agricultural land most of which is classified as "prime" agricultural land. There are no incorporated communities in the Township and only several settlement clusters at Kimble adjacent Delematre Road, and adjacent the intersection of Mason and Patten Tract Roads in the northwest corner of the Township. The remaining housing is scattered along Patten Tract Road and other isolated locations throughout the Township. There is the ODNR 296-acre Milan Wildlife Area in the far southeast corner of Oxford Township within the valley of the West Branch of the Huron River.

Oxford Township (Continued)

The Township's road network consists of the following east-west routes: State Route 113, skirting the southern edge of the Township and Mason Road on the southern edge of the NASA installation in the northern part of the Township. Thomas Road, Ransom Road and Patten Tract Road all provide for north-south access through most of the Township. In addition, State Route 99 cuts through the southwest corner of the Township.

Finally there is the B&O Railroad right-of-way which passes north-south through the middle of the Township and skirts around the western side of the NASA landholding, and two underground pipelines, one which parallels that railroad right-of-way, and a second one which follows a short distance north and south of the Ohio Turnpike as it passes east-west through Oxford Township.

Milan Township:

Milan Township is an inland township in the south-central section of Erie County. This Township contains a total of 17,229 acres or 9.9% of the County's total land area (Table 4-10) and is square-shaped. The estimated 1980 population of Milan Township is 3,285 persons which represents a +7.9% increase over the 1970 level. All of the new residential construction which occurred through the 1970's consisted of building sites created through lot splits rather than the creation of new major subdivisions. This statistic is also a reflection of the lack of available utilities required by more extensive residential development and housing.

The Huron River meanders through the entire Township following generally a northeast-southwest orientation. The Huron River Valley is quite scenic and contains limited tree cover in its immediate vicinity. The tributaries of the Huron River, on the other hand, are characterized by relatively heavy forest cover along those drainageways, most notably Pancas Creek and Mud Brook. In addition, there is extensive forest cover to be found east of Milan to the north of Seminary Road. Except for certain edges of the Huron River Valley, the Milan Township land base is relatively flat. The northern half and southeast quadrant of Milan Township are predominantly agricultural in character except for the one piece of the NASA landholding and the Huron River and Pancas Creek Valleys. Virtually all of this agricultural land in the Township consists of "prime" agricultural land which is relatively productive. Other major "public and quasi-public lands", in addition to the NASA Plumbrook Facility include the Erie County Sanitary Landfill adjacent Hoover Road to the southeast of Huron-Avery Road, and the Edison High School north of State Route 113 in the vicinity of McIntyre Road. The Ohio Department of Natural Resources owns and operate two wildlife areas in the Milan area, including the 296-acre Milan Wildlife Area located on Lovers Lane Road in Oxford Township, and the 25-acre Galpin Wildlife Area located along Seminary Road. In addition there is the future EHOVE Vocational School complex site located on Mason Road just to the west of U.S. Route 250.

Milan Township (Continued)

Urban development is concentrated within the Village of Milan with its business district and residential neighborhoods and in the immediate vicinity along numerous roads which radiate outward from the Village. Other clusters occur adjacent to the Ohio Turnpike-U.S. Route 250 Interchange, where numerous commercial and limited industrial establishments are to be found; in several "strip" residential areas along the northern edge of the Township (Scheid Road) and along River Road in the northeast corner of the Township; and along Mud Brook Road (State Route 13).

Both sides of the Huron River Valley are readily accessible from points within the County by way of Mud Brook Road and River Road. U.S. Route 250 and State Route 113 cross the township in a north-south and east-west direction, respectively, carrying regional traffic into and out of the Milan area. In addition, the Ohio Turnpike bisects the township, intersecting with U.S. 250 just north of the Village of Milan.

A considerable amount of development potential does exist in the Milan area because of the availability onto the Ohio Turnpike, plus the confluence of other major highways, including U.S. Route 250, State Route 113 and State Route 13. The lack of adequate utilities has constituted a major constraint in the recent past and the timing of a new sewage collection system will have a considerable impact on the rate at which Milan Township will grow over the Plan period.

Florence Township:

Florence Township is one of the inland townships located in the southeast corner of Erie County. The Township is square-shaped and contains a total of 17,300 acres or 9.9% of the Erie County total land area (Table 4-10). The majority of its land base is located south of the Ohio Turnpike right-of-way and the bulk of the Township's land consists of agricultural land. Florence Township is one of the most rural townships in the County and its 1970 population of 1,576 was among the three lowest (together with Groton and Oxford Townships) within the County. The agricultural land is classified as being a little less productive than the "prime" agricultural land that is found in numerous other portions of Erie County. In addition the Florence Township farms tend to be smaller in average size than those found elsewhere in the County, partly due to some variation in topography and the existence of certain forest cover in various locations.

The Vermilion River Valley occupies a significant amount of the lands in the southeast quadrant of and northeastern edge of the Township. The Vermilion River cuts through a relatively deep and scenic gorge as it meanders through this eastern portion of the Township. This river valley is quite heavily forested all the way through the Township and some additional tree cover is to be found along its East Fork and other tributary streams. The Vermilion River is an estimated 58.7 miles in length and the entire Vermilion River Basin encompasses a total of 271.7 square miles.

Florence Township (Continued)

The Chappel Creek drainageway passes through the southwest quadrant of the Township and there exists sizeable woodlands, both within this creek valley as well as in certain of the upland areas. In addition, a small portion of Sugar Creek passes through the northern section of the Township on into Vermilion Township and this stream ultimately empties into Lake Erie.

The bulk of the Township's urban development is located at the unincorporated settlement cluster of Birmingham and at the unincorporated settlement cluster of Florence, both of which are located along State Route 113 in the middle section of the Township. Both settlement clusters contain a combination of residential development and limited commercial facilities. In addition, considerable "strip" residential development is to be found along State Route 60 and Butler Road on the east side of the Township along State Route 113 frontage through the middle section of the Township and in the northwest quadrant section of the Township, along Mason Road and Angling Road. The Cleveland Quarries operation is to be found north of the Ohio Turnpike along Harrison Road. In addition, there are a number of smaller industrial establishments on the outer edge of the Birmingham area and along the State Route 113 frontage between Birmingham and Florence. The Ortner Airport has recently closed down its operations in the southern part of the Township, and it is not anticipated that flying activity will resume in the future.

The Lorain County Metropolitan Park District owns and operates a facility along the Huron River and Birmingham and the Girl Scouts have a 325-acre facility called Camp Timberlane south of Denman Road and between Butler and Green Roads in the southeastern corner of the County.

There are a number of relatively small inland wetlands scattered throughout the middle section of the Township, both north and south of Harmon and Garfield Roads and north and south of the Ohio Turnpike.

The road network of the Township is characterized by the following east-west route: the Ohio Turnpike and State Route 113 through the middle of the Township and Mason Road on the northern edge of the Township. In a north-south direction State Route 60 extends throughout the eastern part of the Township and Florence-Wakeman Road-Joppa Road traverses the Township on the west side of the Township. There is an underground pipeline which passes through the southern half of the Township in an east-west direction.

Florence Township does not enjoy good general accessibility located as it is in the corner of the County and without access onto the Ohio Turnpike. The agricultural operations are expected to remain an important part of the Township's future economic activity and there does exist an opportunity to retain and enhance the scenic values of the Vermilion River Valley, both as informal open space and in a few limited instances as public parkland. As future urban development does occur in this area it is important

Florence Township (Continued)

to see that this occurs in as compact a fashion as possible in order to preserve the Township's agricultural lands even though they are not classified as "prime" agricultural land.

Major Land Use Changes in Erie County: 1970-1980

Among the most significant land transactions over the past decade has been the purchase of approximately 2,000 acres in Berlin Township and the southwestern corner of Vermilion Township by Ohio Edison Company for the purpose of constructing the proposed Erie Nuclear Generating Station. A recent decision not to proceed with the construction of that facility leaves open the question of how this large landholding will ultimately be utilized. Secondly, the Ohio Department of Natural Resources has been very active in carrying out land acquisition of certain environmentally sensitive areas within the coastal zone, in particular Old Woman Creek National Estuarine Sanctuary, encompassing a 510-acre wetland area at the mouth of Old Woman's Creek and the 388-acre Sheldon's Folly Wildlife Area adjacent the Sawmill Creek recreation complex. Currently pending is the sale of some 2,100 acres deemed as surplus by the National Aeronautics and Space Administration (NASA). Of that total, about 645 acres are being transferred to the U.S. Environmental Protection Agency and the remaining surplus property is to be sold to private individuals or groups. There are restrictions on about half of this remaining land that is located along the western and southwestern borders of the NASA landholding requiring that those lands be used for agricultural purposes only. Two other properties are being disposed of by NASA along Mason Road, where the U.S. Army Reserve will use the site as an armory and a second site, at the intersection of U.S. 250 and Taylor Road for future use as the site of the EHOVE Vocational School.

Other significant changes in land use have been the continuing consolidation of farm properties throughout the County. Current data are not available on the existing number of farms and their relative size and it will not be until the 1979 Census of Agriculture data becomes available, but it is clear that the trend toward farm consolidation is continuing albeit at perhaps a somewhat slower rate than in the past decades. Also of note is the fact that, as indicated in Table 4-6, the number of lot splits over the 1970-1980 decade was considerably greater than the number of lots created through the establishment of major subdivisions. The average major subdivision consisted of some 18 lots and there were a total of 681 lots subdivided over the last 10 years, whereas lot splits accounted for the creation of approximately 2,542 lots during that same time, assuming the average lot split consisted of two (2) lots. Perkins Township was the location of the most significant land use changes between 1970 and 1980 as growth moved outward from the City of Sandusky into the unincorporated lands within Perkins Township.

CHAPTER V

SUMMARY STATEMENT OF MAJOR LAND USE PROBLEMS AND DEVELOPMENT OPPORTUNITIES

Included within Chapter III was a review and analysis of various development factors and environmental constraints that prevail within the local area. Certain of these constraints have helped to determine where new population and new urban development has materialized historically and where new urban development is likely to occur. Following in Chapter IV was an evaluation of the prevailing development pattern in Erie County including an overview by sector of each particular type of development and an analysis of the development pattern within each individual township throughout Erie County. From the planning analysis contained in these two chapters and an evaluation of development potential, there has emerged a series of land use problems and conversely development opportunities to be found within Erie County. This chapter contains a summary statement of those problem areas and opportunities.

The major land use problems will be enumerated first and the deficiencies identified in this enumeration will provide one important focus for the land use planning that follows. Where appropriate and to the fullest extent possible, remedial action will be recommended. The major land use problems in Erie County appear to be the following:

1. A majority of the Lake Erie shoreline has been pre-empted by private development thereby restricting somewhat public access to this water body.

2. New urban development has occurred in a haphazard scattered pattern within the coastal zone with the net result that incompatible land uses are frequently located next to one another, the coastal highway (U.S. Route 6/Old State Route 2) does not function particularly well as a major trafficway and the development potential of certain lands is reduced by their proximity to substandard development.

3. A number of older development areas within the coastal zone have witnessed a conversion of what were orignally summer homes for seasonal usage into year-round dwellings, with the net result that their infrastructure is not really adequate (streets are narrow, septic tanks do not always work, etc.).

4. Urban development has encroached upon certain wetlands and other estuarine areas causing significant damage to these important ecological areas.

5. Physical characteristics in large portions of Erie County (soil types, drainage characteristics, and shallow-depth to bedrock) have combined to create a major constraint as to where septic tanks may be successfully installed. There exists a general lack of utilities throughout most of the outlying lands in Erie County and many of the pre-existing septic systems are overloaded and malfunction at the present time.

6. "Strip" residential development and housing has proliferated along the frontage of many state highways, county and township roads throughout Erie County resulting in the somewhat early obsolescence of those traffic facilities, built-in conflicts with adjacent farm activities and, in some instances, a devaluation of adjacent farm properties.

7. There are a number of smaller and individual warehouses and industrial establishments scattered in isolated locations within certain rural portions of Erie County (Florence Township, Berlin Township, Huron Township, Milan Township).

8. An excessive amount of land is zoned for commercial development in a number of Erie County townships (Florence Township, Berlin Township, and Groton Township).

9. Because of certain changes occurring in a family composition for Erie County's population, changing lifestyles and changing economic conditions. There exists an unmet demand for multiple-family housing units in a number of locations within the County.

10. "Prime" agricultural land is being encroached upon by "strip" residential development and by new residential subdivisions, thereby reducing the amount of valuable acreage and creating certain land use conflicts, especially between this new development and the raising of livestock and livestock products.

11. Commercial development has materialized at isolated locations through the coastal strip between Sandusky and Huron and between Huron and Vermilion. This pattern of scattered commercial development becomes even more of a problem as residential infilling continues within these general areas.

These major land use problems are to be addressed in the formulation of the Official Land Use Development Plan for Erie County. In addition to suggesting remedies for those situations, it will be the function of Erie County's Official Land Use Plan to indicate how to capitalize upon the numerous development opportunities that do exist within Erie County. Some of the more significant development opportunities are outlined below:

1. Tourism and outdoor recreation represent a major opportunity area in Erie County. There already exists a sizeable market from which to draw to new attractions. Erie County's natural setting has already been capitalized upon to create a complex of tourist and recreation attractions and the possibilities have been by no means exhausted in this area. Additional private recreation facilities could be established at a number of locations. The energy crisis notwithstanding, the locations within Erie County remain within in very relatively short distance of a sizeable "service area" population which will be able to reach destinations within the County without difficulty.

2. The opportunity exists to generate new economic development, particularly water-oriented industry and other economic activities that can capitalize upon the proximity and interchange of different modes of transportation (water, rail, and highway). Shipping activities represents still another related area which is likely to grow significantly over the Plan period.

3. With the high level of utility master planning that is currently taking place in Erie County for the various "201" Facilities Planning Areas, there exists a golden opportunity to closely interrelate new urban development (and especially new residential construction) with the proper infrastructure so that this new urban development materializes within the boundaries of emerging "utility service areas" which constitute in effect the beginnings of "urban service areas". This can be done through the formulation of zoning strategies which allow for new development in accordance with their ability to be serviced with the necessary utilities.

4. Substantial infrastructure exists at the present time within Erie County's three cities and, to a lesser extent, within certain of the County's villages, and there is an opportunity to structure new urban growth and development in such a way as to utilize that infrastructure or take advantage of close proximity to that infrastructure. In this way community expansion can occur in an orderly, cost-efficient manner regardless of whether municipal annexation takes place.

5. The preservation and enhancement of certain unique natural areas and natural resources in Erie County represents still another important opportunity in the local area with the abundance of scenic river and creek valleys, wetlands, major forest cover and other such natural features being in existence as part of the County's land base. There exists an opportunity for preservation and conservation on a private basis, as well as through public action and, in certain instances, such preservation efforts need not be incompatible with new development (e.g. in the case of planned unit development projects).

CHAPTER VI

FRAMEWORK FOR THE COUNTY OFFICIAL LAND USE DEVELOPMENT PLAN

In order to establish a clear framework for the formulation of the Erie County Official Land Use Development Plan it has been necessary to enumerate a whole series of local area "growth and development factors" that are likely to be or may be operative in the Erie County area over the next ten to twenty years and to outline ways in which those factors are likely to impact the future rate of population/change growth. Secondly, a set of alternative population forecasts has been prepared for Erie County as well as for the individual townships and municipalities within the County in five-year intervals over the twenty-year Plan period. "Low", "intermediate" and "high" population forecasts have been outlined for the years 1985, 1990, 1995 and 2000, in order to establish a population dimension relative to the land use planning that is to follow. In addition, the concept of the Official Land Use Development Plan and individual Township Land Use Plans is to be described and the functions of those Plans enumerated in detail so that both County and township officials will be aware of the various ways in which these Plans may be utilized in their ongoing operations. Finally, an overall time frame will be determined for the Land Use Development Plans and the numerous Plan proposals and recommendations will be time-staged over four different intervals: 0-5 years; 5-10 years; 10-20 years; and 20 years and beyond. The addition of this time dimension is intended to provide an overall strategy for accommodating expected future growth and development in an orderly, cost efficient manner.

Statement of Recommended County Development Goals and Objectives

A series of recommended development goals and objectives are listed below and these development goals and objectives should be adopted as official policy by the Erie Regional Planning Commission and the Erie County Board of County Commissioners, as well as by individual boards of township trustees so that they provide direction for future planning and zoning efforts within Erie County. These recommended development goals and objectives may be divided into several different categories, including some general goals and certain more specific objectives under the headings of "Land Use Development","Environmental Conservation and Preservation", "Economic Development", and "Tranportation and Circulation". These recommended County development goals and objectives are as follows:

General:

1. To capitalize upon the strategic location of Erie County along the edge of Lake Erie and between two of the larger metropolitan areas within the State of Ohio - the Toledo and Cleveland Metropolitan Areas.

2. To encourage that urban settlement pattern which will result in maximum enery conservation.

3. To facilitate orderly, new urban growth and development wherever this materializes in Erie County over the Plan period.

Land Use Development:

1. To ease the transition of certain outlyling lands from agricultural production into urban development through the orderly/economic extension of streets, utilities and other required public facilities.

2. To minimize conflicts between farming practices and areas of urban development (primarily housing).

3. To interrelate the timing of proposed new urban development with utility availability and thereby to focus future growth within utility "service" areas.

4. To maintain a sound balance between the urban development that is and will be concentrated throughout the northern-tier of Erie County (the coastal townships) and the more rural, agricultural areas in the southern half of the County.

5. To encourage relatively compact development of housing as well as business and industry; to avoid wherever possible and to minimize "strip" residential and other type development along state highway frontages and along the various county and township roads.

6. To concentrate new urban development in close proximity to existing, built-up areas at Sandusky, Huron and Vermilion where the public infrastructure is largely already in place and available to be utilized.

7. To retain existing and to attract new industrial development that will not adversely affect Erie County's natural resource base (the land base, water quality, air quality, etc.).

8. To facilitate housing production so that the various type families/individual in income levels will not be excluded from the opportunity of home ownership. To avoid over-regulation of new subdivisions or any other actions which would contribute unduly to increased new home costs.

9. To conserve the existing housing which is in basically sound condition and to remedy existing housing deficiencies wherever it is economically feasible to do so.

10. To provide decent, safe and sanitary housing to all Erie County residents.

Economic Development:

1. To encourage tourism as an important growth area within the local area economy.

2. To protect inlying areas of mineral extraction so that the necessary rock materials will be available to Erie County's townships and municipalities at a reasonable cost.

3. To allow for port expansion at Sandusky and Huron so as to capitalize upon the availability of cheaper water transport as a competitive advantage in future industrial development promotions efforts in Erie County (see the latter part of this chapter for a more detailed description of this factor.

4. To protect "prime" agricultural land; to minimize the encroachment into these highly productive areas; and to explore all possible alternative locations for community expansion where such alternatives do exist.

5. To facilitate new economic development in Erie County and to generate in the process the maximum number of new jobs in the local area economy.

6. To concentrate new industrial development with compact districts, "parks and/or areas" where the necessary infrastructure can be provided, and where the potential impact on neighboring lands is minimal.

7. To protect farming interests in those portions of Erie County where agriculture is to remain the predominant economic activity and land use.

8. To accommodate the expected short-run and long-run impact of the proposed Erie Nuclear Generating Station should that facility actually be built (see the latter part of this chapter for a more detailed treatment of the anticipated environmental impact in general of this proposed facility).

Alternative Forecasts of County, Township and Municipal Populations

The demographic and spatial analysis of the local area population described in Chapter II contained a review in some detail of the changing composition of the Erie County population and documentation of past changes in the amount, growth rate and location of specific populations for the townships and municipalities within Erie County as well as for the County. This analysis of past and recent population change/growth has been taken into account in the formulation of alternative forecasts for Erie County. Other population forecasts that have been made for Erie County in the past were reviewed. Standard statistical methods, generally employed by demographers, were employed to generate some initial forecasts but these were modified, to a greater or lesser extent, by factoring in the enumerated "growth and development" factors that are outlined elsewhere within this Chapter because the rate at which certain of these factors materialize (if they do indeed materialize at all), will have a very important impact on the probable rate at which many of these future populations will grow. In addition, the whole series of environmental constraints and development factors that have been specified in Chapter III has provided significant input in the formulation of these alternative population forecasts. There are numerous instances throughout Erie County where future population growth will not occur because of prevailing development constraints or because of the existence of certain environmentally areas which do not allow for such development. Among the development factors that have been taken into account are also market considerations such as what areas appear to be most attractive for future residential development and housing and conversely, which areas, for one reason or another, are not especially appealing as locations for new housing.

Taking all of the materials and factors into account, alternative population forecasts have been formulated for the total Erie County population, individual townships within Erie County and the individual cities and villages within the County. These population forecasts have been prepared in five-year increments for the years 1985, 1990, 1995, and the year 2000. In addition, three alternative forecasts have been compiled for each target year; an "A" or "high" forecast which assumes that a majority of the favorable "growth and development" factors will materialize over the next ten to twenty years; a "B" or "intermediate" forecast which takes as its working assumption the fact that some reasonable combination of favorable and a limited number of unfavorable factors will, in fact, materialize over the next twenty years; and a "C" or "low" forecast which assumes that a number of favorable "growth and development" factors will fail to materialize over the next ten to twenty years. The "B" or "intermediate" forecast is the set of population forecasts that have been used as the framework for the formulation of the Erie County Official Land Use Development Plan that is to be described in Chapter VII of this report. Table 6-1 contains these alternative population forecasts for the individual townships and for Erie County as a whole; Table 6-1 outlines the alternative

Table 6-1
Erie County
ALTERNATIVE POPULATION FORECASTS: COUNTY, TOWNSHIPS AND MUNICIPALITIES
1980-2000

ABSOLUTE POPULATION FIGURES

	ACTUAL	ESTIMATED		FORECASTED**											
	1970	1975	1980	1985			1990			1995			2000		
				"C"	"B"	"A"	"C"	"B"	"A"	"C"	"B"	"A"	"C"	"B"	"A"
TOWNSHIP															
Berlin	3,050	3,104	3,190	3,250	3,290	3,400	3,350	3,575	3,850	3,525	3,800	4,075	3,700	4,000	4,325
Florence	1,576	1,650	1,730	1,765	1,792	1,875	1,900	2,020	2,300	2,000	2,105	2,350	2,075	2,450	2,675
Groton	1,122	1,140	1,160	1,175	1,185	1,200	1,190	1,210	1,240	1,225	1,260	1,320	1,310	1,400	1,475
Huron	8,641	9,387	10,250	10,700	10,950	11,450	11,500	11,950	12,350	12,600	13,100	13,800	13,200	14,120	14,900
Margaretta	5,688	5,574	6,480	7,000	7,330	7,780	7,800	8,250	8,600	8,000	8,950	9,250	8,600	9,450	9,900
Milan	3,046	3,145	3,285	3,350	3,410	3,710	3,520	3,780	4,100	3,700	4,100	4,400	4,000	4,400	4,725
Oxford	1,040	1,160	1,280	1,310	1,340	1,400	1,380	1,420	1,500	1,430	1,500	1,575	1,500	1,580	1,700
Perkins	10,451	11,300	13,000	13,300	13,500	14,300	13,300	14,100	15,200	14,000	14,800	15,700	14,900	15,700	16,200
Vermilion	8,446	9,330	9,720	10,100	10,320	10,900	10,700	11,310	12,400	11,800	13,300	14,200	13,100	14,440	15,200
TOTAL - ERIE COUNTY*	75,909	77,921	82,015	83,615	85,537	89,190	86,920	87,615	96,250	91,465	97,515	102,890	96,575	103,340	108,930

*County total includes population figures for all the townships, cities, and villages within Erie County.

**The "C" column represents the "low" forecast. The "B" column represents the intermediate forecast; and the "A" column represents the "high" forecast. The "B" or "intermediate" forecast has been used for planning purposes.

NOTE: The term Absolute Population Figures means total population for the particular local governmental unit.

Table 6-1 (Continued)
Erie County
ALTERNATIVE POPULATION FORECASTS: COUNTY, TOWNSHIPS AND MUNICIPALITIES
1980-2000

ABSOLUTE POPULATION FIGURES

	ACTUAL	ESTIMATED		FORECASTED**											
	1970	1975	1980	1985			1990			1995			2000		
				"C"	"B"	"A"	"C"	"B"	"A"	"C"	"B"	"A"	"C"	"B"	"A"
MUNICIPALITY															
Bay View	798	798	810	820	830	840	830	850	865	850	900	910	860	900	920
Berlin Heights	828	835	850	865	880	975	900	1,050	1,200	985	1,250	1,350	1,250	1,390	1,475
Castalia	1,045	1,085	1,125	1,190	1,240	1,390	1,260	1,390	1,520	1,400	1,530	1,650	1,575	1,700	1,800
Huron	6,896	7,399	8,000	8,250	8,400	8,850	8,450	8,950	9,350	9,000	9,700	10,400	9,600	10,300	11,350
Kelleys Island	175	175	170	165	170	175	180	200	210	185	200	220	190	200	230
Milan (pt)***	1,297	1,310	1,340	1,360	1,390	1,440	1,400	1,450	1,500	1,460	1,560	1,620	1,530	1,590	1,670
Sandusky	32,674	31,956	31,750	31,500	32,250	33,000	32,100	33,200	34,500	33,000	34,400	36,000	34,000	35,600	37,600
Vermilion (pt.)***	5,500	5,800	6,100	6,350	6,600	6,800	6,800	7,100	7,450	7,350	7,700	8,100	7,850	8,240	8,390
SUB-TOTAL - ALL MUNICIPALITIES (URBAN POPULATION)	43,000	45,790	50,145	50,500	51,760	53,470	51,920	54,190	56,595	54,230	57,240	60,250	56,855	59,920	61,925

*County total includes population figures for all the townships, cities, and the villages within Erie County.

**The "C" column represents the "low" forecast. The "B" column represents the intermediate forecast; and the "A" column represents the "high" forecast. The "B" or "intermediate" forecast has been used for planning purposes.

***Population figures shown are for that portion of the community that is located within Erie County.

NOTE: The term Absolute Population Figures means total population for the particular local governmental unit.

Source: 1970 Census of Population
Erie Regional Planning Commission, Population Estimates.
Woolpert Consultants, 1980.

Table 6-2 (Continued)
Erie County
ALTERNATIVE FORECASTED POPULATION GROWTH RATES: COUNTY, TOWNSHIPS AND MUNICIPALITIES
1980-2000

		FORECASTED GROWTH RATES**								
	ESTIMATED GROWTH RATE 1970-1980	1980-1990			1990-2000			1980-2000		
MUNICIPALITY		"C"	"B"	"A"	"C"	"B"	"A"	"C"	"B"	"A"
Bay View	+ 1.5%	+ 2.5%	+ 4.9%	+ 6.8%	+ 3.6%	+ 5.9%	+ 6.4%	+ 6.2%	+11.1%	+13.6%
Berlin Heights	+ 2.7%	+ 5.9%	+23.5%	+41.2%	+38.9%	+32.4%	+22.9%	+47.1%	+63.5%	+73.5%
Castalia	+ 7.7%	+12.0%	+23.6%	+35.1%	+31.0%	+22.3%	+18.4%	+40%	+51.1%	+60%
Huron	+16.0%	+ 5.6%	+11.9%	+16.9%	+13.6%	+15.1%	+21.4%	+20%	+28.8%	+41.9%
Kelleys Island	- 2.9%	+ 5.9%	+17.7%	+23.5%	+ 5.6%	0%	+ 9.5%	+11.8%	+17.7%	+35.3%
Milan (pt)***	+ 3.3%	+ 4.5%	+ 8.2%	+11.9%	+ 9.3%	+ 9.7%	+11.3%	+14.2%	+18.7%	+24.6%
Sandusky	- 2.8%	+ 1.1%	+ 4.6%	+ 8.7%	+ 5.9%	+ 7.2%	+ 9.0%	+ 7.1%	+12.1%	+18.4%
Vermilion (pt.)***	+10.9%	+11.5%	+16.4%	+22.1%	+15.4%	+16.1%	+12.6%	+28.7%	+35.1%	+37.5%
TOTAL, ERIE COUNTY*	+ 8.0%	+ 6.0%	+ 6.8%	+17.4%	+11.1%	+17.9%	+13.2%	+17.8%	+26.0%	+32.8%

*County total includes population figures for all the townships, cities, and villages within Erie County.

**The "C" column represents the "low" forecast. The "B" column represents the intermediate forecast; and the "A" column represents the "high" forecast. The "B" or "intermediate" forecast has been used for planning purposes.

***Population figures shown are for that portion of the community that is located within Erie County.

NOTE: The term Absolute Population Figures means total population for the particular local governmental unit.

Source: 1970 Census of Population
Erie Regional Planning Commission, Population Estimates
Woolpert Consultants, 1980

forecasts for Erie County's cities and villages; and Table 6-2 contain the corresponding forecasts of population growth rates for the County and the individual townships and municipalities.

Huron Township is forecasted to grow from its estimated 1980 population of 10,250 persons to reach 14,120 persons by the year 2000. This represents a percentage increase of +37.8% over the 1980-2000 time period. Margaretta Township's population forecasted to increase from an estimated 6,480 persons (1980) to a total of 9,450 persons (2000) - an increase of +45.8% for the 1980-2000 time period. Vermilion Township is forecasted to increase from its estimated 1980 population - 9,720 persons to reach 14,440 persons by the year 2000 for an increase of +48.6%. Perkins Township is forecasted to increase from its estimated 1980 population of 13,000 to reach 15,700 people by 2000 for a percentage increase of +20.8%. Vermilion, Margaretta and surprisingly Florence Townships are forecasted to enjoy the highest growth rates over the 1980-2000 time period, whereas Groton, Perkins and Oxford Townships are forecasted to experience a significantly lower growth rate (in the vicinity of 20%). The largest influx of new population is expected within Vermilion Township, an increase of some 4,720 persons is expected to materialize over the next 20 twenty years. The corresponding figures for Huron Township are +3,870 persons, for Margaretta Township +2,970 persons and for Perkins Township +2,700 persons. The forecasted increases for Milan, Florence, and Berlin Townships are in the intermediate range - between 800 and 1,200 persons - and finally it is anticipated that Oxford and Groton Townships will increase by only several hundred persons over the 1980-2000 time period.

Erie County's population in 1970 was 75,909 persons; it was estimated to number some 77,921 persons in the year 1975 and to have reached 81,665 persons by 1980. The "B" or "intermediate" forecasts are for Erie County's population to total 85,087 in 1985; 90,615 in 1990; 97,315 persons in 1995; and to reach a total of 103,340 persons by the year 2000 for a percentage increase of +26.5% over that 1980-2000 time period.

The totals for the combined city and village populations are contained in Table 6-1 and the Erie County totals are contained in Table 6-1; dividing the total urban population by the Erie County total population gives us the forecast of the future ratio of urban to rural population within Erie County. From the examination of these figures it is anticipated that the urban population will increase its relative share from the estimated 61.3% in 1980, to 62.4% in 1985, to 63.6% in 1990, to 64.7% in 1995 and to reach 65.4% by the year 2000. This means that almost two-thirds of the total Erie County population will be contained within the County's cities and villages by the end of the Plan period. This together with the anticipated concentration within the coastal townships and Perkins Township are among the most important population characteristics for the future Land Use Planning that is being undertaken.

Enumeration of Local Area "Growth and Development Factors"

The actual future population growth and urban development in Erie County will be dependent upon a number of factors. Some of these factors materialize at the national or regional level such as the general state of the national and Ohio economy, and are generally considerations over which Erie County itself has relatively little or no control. The future prospects of the automobile industry will have an important impact on quite a bit of economic activity within Erie County and therefore upon local area development. Similarly, the future role that the coal industry plays in the national energy picture will have a significant impact on what happens within the local area. On the other hand, there also exists a number of local and areawide "growth and development factors" that will impact the rate at which Erie County is likely to change/grow over the next twenty years and it is these more local considerations that are enumerated below. The rate at which these factors materialize or make themselves felt, if indeed they materialize at all, will affect the amount and type of development that occurs in Erie County and also what the Erie County population is likely to be over the next twenty years. The description of these various "growth and development factors" is intended to make explicit, to the fullest extent possible, those local and areawide factors which can be foreseen at the present time and whose potential impact may be anticipated. Because of the considerable uncertainties involved, no one forecaster can know in advance what unique combination of favorable and/or unfavorable factors will actually happen over the next twenty years and in what sequence or combination. As a result, the population forecast contained later in this Chapter are formulated over a range of possibilities to take this uncertainty into account.

There appear to be two separate levels at which these "growth and development factors" are at work - the macro-scale considerations which affect not only Erie County but certain other adjacent coastal counties as well, and other micro-factors which pertain specifically to Erie County itself and areas within the County. Among the macro-factors are the following:

(1) Erie County and several other adjacent counties are increasingly coming within the "impact zone" of intensified development pressures as a result of growth moving outward from the two urban counties in Ohio's coastal zone (Lucas County and Cuyahoga County). The fact that Erie County is located roughly in the middle between these two metropolitan areas, has accounted for some of its growth in recent years and will continue to account for some level of the development pressures felt in the local area.

(2) Tourism and recreation is a major industry, both in Erie County and throughout the coastal area in the vicinity of Erie County. There exists a large, established complex of tourist attractions which generate large numbers of visitors every year into the local area. Foremost among these, of course, is

the Cedar Point Amusement Park which attracts over 2,000,000 visitors per year. There are a whole series of state parks and wildlife reserves on some of the islands and encompassing certain coastal wetlands areas. In addition, a number of commercial recreation areas are to be found, including facilities such as the Sawmill Creek resort complex adjacent Huron, the Blue Hole at Castalia, historic sites such as the Rutherford B. Hayes Presidential Library in Fremont, the Thomas A. Edison Birthplace at Milan, all of which are open to the general public. Certain other facilities such as Lagoon Deer Park and Castalia Farms or the Vermilion Fish and Game Club are quasi-public or private recreation areas which are not open to the general public. The opportunities for boating, fishing, hunting, among other recreation activities serve to attract thousands of visitors each year, have contributed to the general area being called America's fourth coastline and account for the fact that the shoreline area is dotted with a whole series of motels, cottages, camp grounds, picnic areas, restaurants, marinas, souvenir shops and the like which cater primarily to those tourists attracted into the local area.

(3) The availability of first-rate transportation facilities in the form of relatively inexpensive water transport by way of the Great Lakes and good general access over the national rail network both east-west and to the south. The City of Sandusky's port have served as a major coal shipping facilities in the Great Lakes area (see the latter part of this section for a more detailed description of the Erie County ports and their role as a special case "growth and development factor"). With the sharp increase in fuel costs that has occurred in recent years and which will continue to occur, water transportation is becoming even more economical when compared with trucking. The Conrail mainline extends east-west through Erie County, interconnects the local area with the entire older manufacturing belt in the East and with markets and industrial centers throughout the Midwest in addition to which the Norfolk & Western Railroad interconnects the local area with the coal fields in Southeastern Ohio, West Virginia, and Kentucky, as well as other destinations in the South.

(4) A longer range growth factor is the availability of relatively unlimited source of water at Lake Erie. This will become increasingly important as other regions of the country begin to experience increasing water deficits over the next ten to twenty years and may very well tend to counteract some of the other competitive advantages which the Gulf Coast states and Southwestern states have enjoyed over Ohio.

(5) The increasing importance and emerging scarcity of "prime agricultural" land makes it all the more important to minimize the extent to which this type land is preempted for new urban development.

(6) The potential extension of the length of the Great Lakes shipping season, the feasibility of which is currently being studied by the U.S. Army Corps of Engineers.

(7) The potential feasibility of allowing off-shore oil and gas exploration within Lake Erie could affect on-shore development within Erie County over the Plan period.

Included among the micro-factors which will impact future population growth and land use development in Erie County are the following:

(A) Portions of Erie County (most notably Vermilion Township) fall within the commuting range of the major employment centers in Lorain County and the westside of Cuyahoga County. With the prospective completion of the State Route 2 Bypass around Huron, this commuting range is likely to extend even further to the west and encompass greater lands within Erie County. This may provide the stimulus for new residential construction on the eastside of Erie County provided that the increased fuel economy in newer model automobiles keeps pace more or less with the rise in gasoline costs so that such commuting does not become prohibitively expensive for a number of workers in the labor force. The distance between the City of Vermilion and the City of Lorain is nine miles, which translates to between 10 and 15 minutes driving time, and the distance between Vermilion and the City of Cleveland is 40 miles or some 45 to 50 minutes driving time.

(B) The establishment of "urban service areas" at a number of locations in Erie County will have a very important impact on where future urban development will materialize and over what time frame. Future sewer construction within the Sandusky, Sawmill Creek, Huron Basin, Vermilion and Ruggles-Mitawanga "201" Facilities Planning Areas will help determine, to a very large extent, where new residential construction is possible over the Plan period, especially given the shallow depth of bedrock and poor drainage characteristics of many of Erie County soils. Certain assumptions have been made about when new wastewater treatment plants will be constructed in the future and when the major interceptor sewers and related collection systems will be put place within the particular Facilities Planning Area and the relative priorities which are outlined in Chapter VII where the various Plan proposals and recommendations are in many instances, an outgrowth of that set of assumptions.

(C) The extent to which Erie County organizes an aggressive, coordinated and on-going industrial development promotion effort will have a considerable impact on the level of future employment and related development/population growth which typically results from such new economic activity. There may exist a number of industrial development opportunities but the competition for new industry throughout Ohio in general and among the coastal counties in particular, has increased in recent years. Many of these local area opportunities will only materialize through a sustained effort on the part of a number of public officials and private individuals.

(D) The availability of port facilities both at Sandusky and Huron constitutes an important "growth and development factor" in that intermodal points, that is transfer points between several different modes of transportation, are highly attractive locations for certain types of industry and business. The presence of these facilities within the local area should facilitate in attracting additional development as in those industries where transport becomes more important than proximity to raw materials as a locational factor.

(E) The employment base which this NASA Plumbrook represents is an important part of the local area economy. Should additional activities locate on this landholding this would result in stimulus to additional residential construction to house workers at that area. NASA intends to maintain control over most of the Plumbrook facility in order to continue its use as a testing and research site, but not on as large a scale as happened in previous years. Several other public agencies, such as U.S. Environmental Protection Agency, will continue to maintain facilities at this location also. In addition, the U.S. Army Reserves and the Ohio Army and Air National Guards have plans to continue using training facilities at this location. Several of the older NASA facilities are being leased to private corporations at the present time. There are certain limitations on usage of the site because of the fact that there exists a shut-down nuclear reactor on the site, although future plans call for the dismantling of that reactor and the clearance of radioactivity from the site.

(F) The upgrading of U.S. Route 250 between the Avery Underpass and Bogart Road is scheduled to begin within the next several years if some problems with the environmental review clearance can be resolved. Improvement of access to the Cedar Point Amusement Park by realigning U.S. Route 250 between U.S. Route 6 and State Route 2 would influence substantially traffic

patterns within the local area and have certain important effects on the location of future development. Other major highway improvements include completion of the State Route 2 Bypass around Huron which has been held up by the controversy over the highway crossing through ODNR's Old Woman Creek Preserve. The redesign of three stream crossings is expected to resolve that controversy and allow construction to proceed some time over the next two to three years. This in turn is likely to result in the Huron area being subject to more intensive development pressures for new residential construction inasmuch as that area will then fall within commuting range of those employment centers in the Cleveland/Lorain area.

(G) The availability of numerous major highway and local (county/township) road frontages for new home sites has provided "free" streets for local area developers who are looking for any way to keep new home costs down. In addition, certain Erie County farmers are faced with the changing character of the national agricultural sector (farming has become a capital-intensive economic activity) and their landholdings may not be large enough to justify the necessary capital outlays for farm implements tempting them to sell off some of their road frontage to raise the needed capital. In the case of middle-aged farmers without children to take over the farm, selling off frontage for housing becomes an important means of generating income for their retirement years.

The Sandusky and Huron Ports as Special Case "Growth and Development Factors":

Table 6-3 shows total freight and passenger traffic from the Sandusky and Huron Ports during 1968-1977, and for comparison, 1977 data for Toledo and Cleveland. The ports of Sandusky and Huron are relatively small compared to Toledo and Cleveland. Sandusky has no Port authority, is run by the City Commission, and receives public funds through a City Income Tax. Access to the port is via a dredged channel between Sand and Cedar Points (Vogel 1977).

Fourteen (14) piers, wharves, and docks are located in Sandusky. Six handle coal and limestone, four provide marine repair or mooring, one is not used, and three are ferry terminals. Coal is the most important commodity, and three piers handle coal landing and bunkering. Other uses of port facilities include pleasure boating of various types, passenger ferries to Canada, a Customs and Immigration office, commercial fishing, and ferry service to Kellys Island (Vogel 1977).

Table 6-3
ERIE COUNTY
SUMMARY OF FREIGHT AND PASSENGER TRAFFIC IN THE
SANDUSKY AND HURON PORTS 1968-1977, AND COMPARATIVE 1977
DATA FOR TOLEDO AND CLEVELAND, OHIO
(U.S. ARMY CORPS OF ENGINEERS 1978)

YEAR	Sandusky Harbor* FREIGHT (SHORT TONS)	Sandusky Harbor* PASSENGERS	Huron Harbor FREIGHT (SHORT TONS)
1968	6,921,785	273,784	2,252,666
1969	6,857,358	277,272	3,314,531
1970	5,078,007	280,023	2,942,354
1971	4,883,103	215,539	3,332,027
1972	5,612,730	237,417	3,380,742
1973	4,913,719	208,197	3,655,463
1974	4,220,604	214,839	3,325.132
1975	4,532,500	187,197	2,115,680
1976	5,370,083	378,498	2,855,701
1977	4,314,377	186,301	1,933,192

YEAR	Toledo Harbor FREIGHT SHORT TONS	Toledo Harbor PASSENGERS	Cleveland Harbor FREIGHT SHORT TONS	Cleveland Harbor PASSENGERS
1977	23,275,707	--	16,103,781	78,721

*Includes passenger docks on Cedar Point.

Source: U.S. Army Corps of Engineers. 1978. Waterborne Commerce of the United States, Calendar Year 1977. Part 3. Waterways and Harbors, Great Lakes.

Problems at Sandusky's port facility include competition with other ports for business, and the need for a site suitable disposal of confined spoil. To date, sites proposed for disposal in Sandusky Bay by the City and ODNR have been disapproved, and prospects do not appear to be favorable (Vogel 1977).

The Huron Joint Port Authority fulfills a coordination function for the Port of Huron. The Authority is a City-Township combination, and receives no public financial support. The port is located along the Huron River, and access is via a dredged channel. Six wharves and docks, of which four handle cargo, are located in Huron. The major commodities handled in Huron are the iron ore, limestone, and grain loaded from three different docks. A total of 2,115,680 tons were loaded in 1975, a drop of over 1,000,000 tons from 1974 levels. Two of the other three docks are used only for mooring during the winter, and the other receives fish. Two facilities providing marine repair are located in Huron. A diked structure for disposal of polluted dredged spoil is located in Huron. This structure was completed in 1975, and is designed to hold 10 years worth of dredged material. This structure will be transferred to the City of Huron when it is filled (Vogel 1977). The Port Authority wishes to expand southward along the Huron River south of the State Route 2 bridge. Problems perceived in Huron include a scarcity of funds for promotion and management, a need for funds for port planning, and competition with other ports (Vogel 1977).

Expanded port facilities and increased port traffic will have a variety of impacts on the Lake, the shoreline, and to a lesser extent inland areas. Physical expansion of port facilities may directly remove an unknown amount of coastal land from future other uses, and may stimulate pressures to develop nearby coastal lands for related or service type industries. As long as this type of development does not take place on wetland areas or areas of shore that support other important natural communities of plants and animals, direct adverse impacts should be minimal. Indirect impacts however, would be more wide-ranging. Greater amounts of shipping traffic in and out of these parts would generate additional air pollution from water and land-based transportation systems. As shipping traffic increased, the potential for accidental spills of oil and other materials that may be toxic to aquatic and wetland communities will correspondingly increase. Since many of the important hatching and rearing areas for important commercial and sport fish are near the shoreline, a spill near shore might have a long-term impact on local fish populations if large numbers of fish eggs, larvae, or their food supplies were damaged by such a spill. Proper management of safety between these ports should minimize this possibility.

Although these ports are not included as yet in the U.S. Army Corps of Engineers feasibility study of extending the navigation season on the Great Lakes, Sandusky an Huron may eventually be year-round ports if this winter navigation program is instituted. Since existing "spill-clean-up"

technology is now being developed, little practical knowledge of cleaning up spills under ice has been obtained. An under-ice spill could have a more severe impact on the natural resources of the coast because of the difficulty of cleaning it up.

Potential impacts of maintaining ice-free channels are uncertain , from both a ship safety and shoreline impact standpoint. Problems with shoreline erosion or ice-damming of rivers and resultant flooding may possibly increase in severity as a result of winter navigation near Sandusky and Huron. Additional dredging may be required by increased port facilities and activity. The lack of a suitable, environmentally and economically acceptable method of disposing of potentially hazardous (polluted) dredged material in Sandusky will probably restrict port development in this area until the problem is solved. It may prove necessary to either transport dredged spoil inland for safe disposal, or to develop methods of reducing levels of pollutants in the spoil before disposing of it.

Short-term adverse impacts on aquatic life from dredging and port facility expansion will occur. Increases in suspended sediment, release of toxic pollutants, and alteration of nearshore habitats may caue temporary or longer-term reductions in species diversity and populations of local aquatic organisms.

The Proposed Erie Nuclear Generating Station as a Special Case "Growth and Development Factor":

The proposed Erie Nuclear Generating Station would have, when constructed, occupied approximately 178 acres near the center of the 1,740-acre Ohio Edison landholding in central Berlin and Vermilion Townships. Buried intake and discharge lines would link the site with Lake Erie. The intake and discharge structures and pumphouse would be located approximately 3/4 mile west of Ruggles Beach in Berlin Township. Two net electrical 1,282 MW (megawatt) nuclear units, with a closed circulating water heat dissipation system (two natural draft cooling towers) were selected as the preferred alternative. Proposed transmission lines would radiate to the south and west of the plant site (Ohio Edison Company, 1975).

This section includes a general summary of environmental impacts of this proposed electric generating station. The impacts discussed below are divided into four basic categories. Short-term impacts are temporary in nature and will cease following construction of the facility. Long-term impacts are those that will persist following construction. Primary impacts are defined as those resulting directly from the construction and operation of the facility itself. Secondary impacts are those that are induced by the facility itself; for example, secondary impacts would include those generated by the construction of industrial, commercial, or residential developments in the vicinity. This summary is limited to dealing with impacts on air quality, water quality and aquatic and terrestrial ecology.

Air Quality:

Erie County is classified as a non-attainment area for concentrations of Total Suspended Particulates. With the exception of Perkins Township, the County is classified as attainment (meeting standards) for levels of sulfur dioxide. Perkins Township is classified as non-attainment for sulfur dioxide. Photochemical oxidants exceed primary standards throughout the County and the County is classified as non-attainment. Ozone levels also exceed standards and the entire County is classified as non-attainment. According to monitoring results, levels of carbon monoxide and nitrogen oxides do not exceed standards, however, monitoring of these pollutants in the area may not be sufficient to classify the area. Hence, the County is classified as unclassifiable or attainment[1].

1/ Environment Reporter, Volume II, Federal Regulations 40 CFR 81 (last emended August 20, 1979 44 FR 48680), Subpart C-Section 107 Attainment Status Designations, Paragraph 81.336 Ohio, Pages 121:0979-0985.

1. Primary Impacts on Air Quality

Short-Term

During construction, local increases in all of the regulated pollutants will occur as a result of land clearing, construction at the plant site, and the cooling system lines to Lake Erie, operation of machinery, and increased traffic to and from the plant site.

Long-Term

Water vapor from the cooling towers is not expected to create icing or fogging conditions in the area (Ohio Edison Company 1975).

Radioactivity will be closely monitored at and near the plant site, and releases of radioactivity to the air will be strictly controlled in compliance with Federal and State regulations. Such releases are expected to be insignificant under normal operation conditions (Ohio Edison Company 1975).

2. Secondary Impacts on Air Quality

Secondary impacts will result primarily from local or regional changes in land use that are stimulated or facilitated by construction and operation of the plant.

Short-Term

New construction of housing, commercial or industrial establishments, service industries, and road and utility work in the local area will also generate temporary increases in regulated pollutants. These should largely cease when construction is complete. Construction of transmission lines associated with this plant will also generate short-term impacts on air quality, primarily from operation of vehicles and machinery, and from land-clearing activities.

Long-Term

Long-term increases in all regulated pollutants except Total Suspended Particulates will occur as a result of fuel consumption by vehicles and heating systems, and possibly from new industrial establishments that may locate in the vicinity of the plant site. Significant long-term changes in air quality in the area are not expected to occur, given the current EPA regulations that apply to new sources.

Water Quality:

The proposed plant site is drained mainly by Cranberry Creek, a small creek that discharges into Lake Erie, with a small portion of the western part of the site being drained by the Old Woman Creek watershed.

1. Primary Impacts

Short-Term

The impacts described below are based upon information in the Ohio Edison Company (1975) Application to the Ohio Power Siting Commission for the Erie Nuclear Plant. Minor adverse impacts on water quality of Cranberry Creek from soil erosion during construction are anticipated, although a variety of mitigative measures including sedimentation basins and mulching will be employed. The western tributary of Cranberry Creek will be rerouted, and a drainage channel east of the plant will be constructed. Surface runoff may increase slightly as a result of this construction. Ohio Edison further states that "only a minor portion of the Old Woman Creek watershed will be affected" (p. 13-04-C-20).

Effluent from the on-site sewage treatment plant, which will be operated in accordance with an NPDES permit, will also enter Cranberry Creek.

Construction of intake and discharge lines between the plant site and Lake Erie will also cause minor degradation of water quality if streams are crossed or soil erosion occurs. The major adverse impact will occur in Lake Erie itself during excavation and installation of intake and discharge lines and structures. Concentrations of suspended solids will likely exceed the recommended maximum of 80 milligrams per liter during construction, however, such events also occur naturally during storms or strong winds in that vicinity (Ohio Edison Company 1975: 13-04-C-20). It should be recognized, however, that the length of time that suspended solids may exceed standards will be greater during construction than would occur during natural storms.

During construction of plant foundations, groundwater levels may be lowered, but groundwater quality is not expected to be adversely affected. Monitoring of ground and surface waters will take place during construction in order to ensure that water quality is not adversely affected.

Long-Term

After construction and revegetation of the plant site and intake-discharge line to Lake Erie are complete, sediment loads in Cranberry Creek and the Old Woman Creek watershed should return to their pre-construction levels. Effluent from the on-site sewage treatment plant will enter Lake Erie, combined with cooling tower discharge. This treatment plant will be operated in accordance with its NPDES permit. Discharge of heated water into Lake Erie will occur during plant operations, this discharge will comply with the Ohio Water Quality Standards that pertain to mixing zones for thermal discharges in Lake Erie. The temperature of this water will not be excessively high as it will have already passed through the cooling towers at the plant site.

Concentrations of dissolved solids will be slightly higher than the surrounding waters in the vicinity of the discharge structure, but are not expected to exceed applicable State and Federal standards. Concentrations of free available and total residual chlorine at the discharge will also meet appropriate standards (Ohio Edison Company 1975: 13-04-C-50). Long-term monitoring of surface and groundwater quality will accompany operation of the plant. Ohio Edison states that discharges of radioactivity to surface or groundwaters will be insignificant during normal operation of the plant. Any accidental release of radioactive liquids would, however, affect groundwater at the plant site (p. 13-05-C-128).

2. Secondary Impacts

Short-Term

Construction of new residences, businesses, industries, roads, and installation of other public utilities could adversely impact water quality and hydrology in the streams draining the area. This will likely be due mainly to increased rates of runoff, and soil erosion, and can be minimized by requiring developers to employ mitigative measures such as sedimentation basins, mulching, and rapid revegetation of bare soils. Construction of transmission lines associated with the plant will also affect surface water quality in areas where soil erosion occurs or creek crossings by equipment are required.

Long-Term

An increased rate of surface runoff is likely to occur in developed areas unless developers are required to construct stormwater retention or detention facilities. If such facilities are not constructed, the hydrology and quality of local receiving waters in developed areas will be adversely affected, by increased rates of runoff and from shock loading of pollutants during rainstorms.

Aquatic Ecology:

1. Primary Impacts

Short-Term

During construction minor increases in sediment loads in Cranberry Creek and possibly the upper reaches of Old Woman Creek may adversely affect any resident aquatic species that are sensitive to siltation. Since the on-site sewage treatment facility will be operated according to an NPDES permit, adverse impacts on aquatic biota in Cranberry Creek are not expected to be significant unless upsets to the treatment process occur. Rerouting of the western tributary of Cranberry Creek will eliminate the resident aquatic organisms there, however, the new channels will probably be recolonized after construction is complete.

During construction of the intake and discharge lines and structures in Lake Erie, benthic organisms (apparently mainly midge larvae and oligochaetes) will be directly destroyed. Increased suspended solids stirred up by construction may reduce light penetration and therefore primary productivity, as well as lowering levels of dissolved oxygen in the vicinity of the construction. These changes may adversely affect aquatic organisms in the vicinity of construction. Ohio Edison Company (1975: 13-05-C-135) reports that about 12 acres of lake bottom will be directly disturbed by this construction. This part of the shoreline has been heavily eroded in the past according to Ohio Edison.

Long-Term

The major long-term adverse impact on aquatic life will result from the operation of the intake and discharge lines in Lake Erie. The impacts are not expected to be significant. Entrainment (hence, probable death) of phytoplankton and zooplankton (estimated to be less than 2% of the populations within a two square mile area surrounding the intake per day) will occur, but may be offset by increased reproduction in the area of the discharge, as nutrients are released by the organisms killed by entrainment. Benthos and fish are not expected to be entrained because the structure will be elevated above the lake bottom and will have a low intake velocity (approximately 0.2 feet per second at the screens and 0.08 feet per second one foot from the screens). Loss of fish eggs and larvae (ichthyoplankton) will occur, however, the estimated losses of adult fish from entrainment of ichthyoplankton indicate that the losses will not

not detectably affect commercial and recreational fishing, and that few species valuable as commercial and sport fish will be lost annually. Fish impingement is not expected to occur because there are no traveling screens at the intake structure. Bottom erosion is not expected to occur around the intake and discharge structures, as the intake velocity is low and the discharge structure will include a concrete pad and riprap to prevent erosion. Slightly reduced Dissolved Oxygen levels and increased Biological Oxygen Demand will occur in the vicinity of the discharge structure, but will meet water quality standards and are not expected to significantly affect aquatic biota near the discharge.

Because the area of heated water at the discharge will be relatively small (0.9 surface acres at the $5^{o}F$ isotherm), the area of discharge is not a confined area, discharge velocity is high (6.3 feet per second), adverse effects on aquatic organisms are expected to be minor (Ohio Edison Company 1975: 13-05-C-119 through 125).

Ohio Edison reports that any accident involving release of radioactive liquids would have an insignificant affect on surface waters of the area (p. 13-05-C-128), rather, that any such release would affect groundwater at the plant site.

2. Secondary Impacts

Short-Term

The quality of aquatic habitats in areas of induced development may decline during construction, mainly from sediment loading from erosion of exposed soils. This can be minimized by requiring developers to employ accepted erosion-control techniques. Construction of the transmission lines associated with the nuclear plant will likely also have a minor impact on surface water quality.

Long-Term

It is possible that aquatic habitats may be greatly altered (such as by channelization) or directly eliminated (such as by filling in wetlands) in areas of induced development. This can also be minimized by exercising approriate control over development in sensitive areas, and by requiring developers to construct storm water detention or retention facilities.

Terrestrial Ecology:

1. Primary Impacts

Short-Term

A total of 551 acres of the 1,740-acre property will be completely or partially cleared during construction of the plant. About 306 acres or 66% of this 551 acres is closed deciduous forest, the largest land use type being affected by construction and operation of the plant. Part of this is relatively mature and undisturbed. In addition, because such forests are relatively rare in northern Ohio, this loss represents the major adverse impact on terrestrial communities of wild plants and animals to be caused by the Erie Nuclear Plant, assuming that accidents involving radioactive releases do not occur.

In addition, complete or partial clearing of more than 20 acres of the following other land use types will occur: agricultural lands including annual croplands (47 acres); timber (84.2 acres); transitional, fallow, or recently abandoned cropland (25.6 acres); and spontaneous vegetation including deciduous scrubland (26.1 acres).

The habitat at the site is diverse and supports a corresponding diversity of animal species that utilize forest and agricultural habitats. Reductions in species diversity and populations that will occur as a result of construction will be greatest in those species that require forest habitats for survival. Unfortunately, many of the species of plants and animals considered to be rare or endangered in the state occur in forest habitats only, or require forest habitats during some part of their life cycle.

The following species of plants and animals considered to be rare or endangered in Ohio or the U.S. were either recorded from the site or judged to have a high probability of occurrence there according to Ohio Edison Company (1975, Tables 13-05-C-14 and 13-05-C-15): Bobcat (observed by others on the site, Ohio Endangered), Sharp-shinned Hawk (probably migrant, Ohio Endangered), Cooper's Hawk (observed on the site, migrant or breeding resident, rare in Ohio), Peregrine Falcon (migrant, endangered in Ohio and the U.S.), Bald Eagle (northern subspecies, migrant, Ohio Endangered), Short-billed Marsh Wren (observed breeding on the site, rare), Northern Parula (rare), Pine Warbler (rare), Orchard Oriole (may nest, rare), Spotted Turtle (Ohio Endangered), and Smooth Green Snake (rare), American Chestnut (potentially threatened), American Elm (potentially threatened), Serviceberry (Amelanchier sp., rare), and Highbush Cranberry

(potentially threatened). The Long-bracted Orchid (Coeloglossum viride or Habenaria viridis, Ohio endangered) is reported to occur at the site according to Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus (letter dated July 20, 1979).

Clearing along the pipeline corridor between the plant and Lake Erie will also affect approximately 34.5 acres, only 2 acres of which is forest. This impact will be minimal. Construction of the transmission lines associated with this plant is also likely to eliminate some other natural vegetation types, hence, wildlife habitat throughout the county. The greatest impact will again be on closed forests, since such forests will not be permitted to regenerate under the lines.

Long-Term

After construction and landscaping, approximately 143 of the 306 acres of closed deciduous forest cleared during construction will be permanently lost. The total acreage to be occupied by the permanent facility is approximately 178 acres. The remaining 163 acres may be allowed to undergo succession after construction is complete. The plant and hence animal communities that will occupy this regenerating area will be affected by the compaction of the soils, changes in surface drainage, and possibly in groundwater levels that occurred during construction. Because it takes over 50 years for such forests to regenerate, the quantity of forest habitat lost over the long-term is best represented by the 306 acres originally disturbed during construction.

2. Secondary Impacts

Induced development will likely eliminate, fragment, or alter at least some natural forests, small swampy areas, and other natural or semi-natural plant and animal communities in the area. Although some areas may eventually regenerate, the majority of the affected areas will be permanently lost.

Construction of the transmission lines associated with the Erie Nuclear Generating Station are also likely to adversely impact natural communities in the county, through direct destruction and fragmentation of wooded areas. Because forests will not be allowed to regenerate under transmission lines, impact on forest lands will be most severe, compared to impacts on other land use types.

Overview of Implications of the Aftermath of the Three-Mile Island Nuclear Accident

Although new legislation and reorganization of the Nuclear Regulatory Commission (NRC) is still in the early development and implementation stage, a few comments on what, if any, future changes regarding nucelar power stations are pertinent here.

Reorganization of the NRC, correcting control room deficiencies, more stringent requirements for plant operator training, and more adequate safety planning including requiring counties with nuclear power plants to have approved Emergency Evacuation Plans are major recommendations that were made by the final report by the President's Commission on the Accident at Three-Mile Island (the Kemeny Commission), released on October 30, 1979.

Time Frame of the Plan and Time Staging Plan Proposals

The general time frame for Erie County's Official Land Use Plan is twenty (20) years. For the purpose of anticipating the actual timing of future growth and development, this 20-year time period has been broken down into three stages: 1) the short-range stemming over the next 5 years, 2) the medium-range encompassing the time period from 5 to 10 years, and 3) long-range extending over the time period between 10 and 20 years. In addition, there is a fourth time frame outlined which is very long-range meaning beyond 20 years and extending as far out in time as 50 years which is through the year 2020. The short-range, medium-range, long-range, and very long-range Plan proposals have been noted on Plate 7 in accordance with the following notation:

Short-range; 0-5 years	I.
Medium-range; 5-10 years	II.
Long-range; 10-20 years	III.
Very long-range; 20-50 years	IV.

The actual timing of new urban growth and development will be contingent on a wide variety of "growth" and development factors that have been enumerated elsewhere in this Chapter. The detailed Plan proposals and recommendations outlined on Plate 7 for the County as a whole and on Plate 8-16 for the County's nine townships reflect a larger geographic area than that which will actually develop over any one of those particular time periods. This is due to the fact that urban growth and development almost never occurs in neat, orderly increments because of the particular landholding pattern, differential economic positions of individual property owners, incomplete market information, development constraints, environmental considerations, zoning and other related factors. As a result, a generous reserve of land has been provided for each different time period so as to take into account the differential rates and locations of new urban growth and development.

Erie County officials should clearly recognize that its urban growth and non-urban development will be an ongoing process extending indefinitely into the future and that the Erie County Official Land Use Plan is both a policy document and a working framework to enable the Erie Regional Planning Commission and other County officials to plan for orderly development within the County. The time staging of the particular Plan proposals and recommendations on Plate 7-16 is also outlined in order to enable County, township and municipal officials to carry out their capital budgeting functions in some reasonable relationship to this expected new development.

CHAPTER VII

THE ERIE COUNTY OFFICIAL LAND USE PLAN AND INDIVIDUAL OFFICIAL TOWNSHIP LAND USE PLANS

Concept and Functions of the Plan

In order to be realistic the Official County Land Use Development Plan must reflect the physical constraints inherent in the County's natural setting (e.g. flood plains, forest cover, drainageways, topography, etc.) and the market considerations prevailing in the local area's housing and land market. The Erie County Official Land Use Development Plan is intended to show the generalized land use relationships with regard to the County's future development pattern and to indicate the general direction and magnitude of new urban growth and development, where agricultural cultivation should continue to prevail and where certain features of the local landscape should be preserved. In effect the Erie County Official County Land Use Plan represents, among other things, a statement as to the desirable future balance within the County between non-urban activities and urban development and an indication of the direction in which Erie County should be moving in order to arrive at such a functional relationship.

The primary functions of the Erie County Official Land Use Plan are as follows:

1. To provide an explicit statement of public policy toward the guidance and control of future development within Erie County.

    a. To provide the Regional Planning Commission, Board of County Commissioners, and Township Trustees with policy guidelines in order to assist them in their weekly, monthly and annual decision-making on future public expenditures, specific planning and development matters and ongoing business of the particular governmental and/or planning agency.

    b. To remove as much uncertainty as possible from the development process within Erie County and thereby to facilitate optimum locational decisions on the part of individual farmers, households, businessmen and industries, as well as the respective local governments.

2. To determine the recommended pattern of future land use in each of the Erie County townships so that the respective Township Trustees will have a coordinated basis on which to predicate their own decisions on existing or proposed township zoning resolutions, texts and zoning district maps or on updating existing township zoning regulations.

3. To establish the relationship of Erie's County's future land use development to the local area highway and thoroughfare network, and patterns of general accessibilility.

4. To ascertain what type of balance should be struck between agricultural lands/conservation areas (flood plain, wetlands, open space, parkland) and areas earmarked for future urban development.

5. To establish the framework for coordinated action among Erie County, the Regional Planning Commission, townships, other governmental/administrative agencies within the County, the State of Ohio and the federal government.

6. To provide continuity in terms of direction of Erie County's future growth through successive county administrations.

Description of Planned Land Use Categories

The Erie County Official Land Use Plan contains a statement of recommended future land uses for the County. These recommendations are outlined on the 1"=4000'scale County Official Land Use Plan (Plate 7) and on each of the 1"-1000' scale Official Township Land Use Plans (Plates 8-16) in the form of various planned land use areas. A description and explanation of the planned land use categories follows:

1. Vacant and Agricultural Land: This land area is comprised primarily of Toledo-Fulton soils, Del Ray-Lenawee soils, Kibbie-Tuscola-Colwood soils, Sisson-Tuscola soils, Arkport-Galen soils, Pewano-Bennington soils, and Prout soils. These soils areas should generally be utilized for agricultural cultivation in the form of cropland or pasture. Some wasteland and fallow land will also fall within this land use category, because of the difficulty in isolating variations in the effects of topography and natural drainage, and the relatively small quantities of soil not suited to agricultural pursuits.

2. "Prime" Agricultural Land: This land area consists of the most highly productive agricultural land and comprises a very important part of Erie County's natural resource base. Included in this land use category are the following soil types: Toledo-Fulton Swall's soils, Del Rey-Lenawee soils, Kibbie-Tuscola-Colwood soils, Sisson-Tuscola soils, Arkport-Galen soils, Pewamo-Bennington soils and Prout soils.

3. Floodway/Open Space/Wetlands: This land area generally approximates the one hundred year flood plain lands of the Huron and Vermilion river basins in Milan and Huron Townships and Florence Township, respectively; along the Lake Erie coastline; and along the numerous streams and creeks which pass

3. Floodway/Open Space/Wetlands (Continued)

through the County, especially through the townships of Margaretta, Groton, Berlin, and Vermilion. In addition this general area takes in associated open space lands related to these floodways, often covered with dense forest cover, and also encompasses both the coastal and inland wetlands to be found throughout Erie County.

4. Public and Quasi-Public Land: The public and quasi-public lands reflect those public landholdings that are to be found within the County. Included among these landholdings are Erie County lands and facilities; township buildings; various school buildings and churches and cemeteries. The NASA Plumbrook Facility is included in this general category.

5. Parkland and Recreational Facilities: Included within this planned land use category are existing State and regional (county) parkland, major recreation sites, existing municipal park sites and open space, and State preserves and wildlife areas. Also included within this category are commercial outdoor recreation areas such as public and private golf courses, campgrounds, private hunting and fishing areas, and riding stables.

6. Historic Preservation Area: This category includes individual buildings and sites that have been placed on the National Register of Historic Places as possessing historic or architectural value of national significance or on the Centennial Homes list of the Ohio Historical Society as being of statewide significance.

7. Low Density Residential Development: The low-density residential areas are to be found, for the most part, at outlying locations in the County and should be reserved for larger-lot single-family residential development and housing. While situated on acreage these low-density residential areas ought to be reasonably compact so as not to allow the scatter and penetration of rural non-farm homes into agricultural lands which should remain undisturbed over the Plan's time horizon. Low-density includes a range from one - to three-acre parcels.

8. Medium-Density Residential Development: The majority of the new housing expected to be built over the next twenty years in Erie County is likely to occur within this density range. Medium-density includes the range from 10,000-20,000 square foot lots. It is intended that this housing be located primarily on interior subdivision streets with limited quantities of such dwellings along existing thoroughfares. This medium-density housing should include public wastewater disposal systems at the outset. This residential development should be

8. Medium-Density Residential Development (Continued)

as compact as possible and should be closely related to the availability of public sewer and to proximity to other infrastructure and built-up development.

9. Medium-High Density Residential Development: These medium-high density residential areas are to be found at more inlying locations relative to the already built-up portions of Erie County and in close proximity to the water distribution system and wastewater collection system (existing and/or planned). This medium-high density housing ought to be reasonably compact at locations which best accommodate residential development and housing and which might be able to tie into the water supply system and wastewater collection system at a later date. By medium-high density residential is meant housing at a "gross" density of ranging from eight (8) to twelve (12) units per acre. The more compactly this housing is laid out, the fewer potential conflicts there will be with adjacent activities. It is intended that this housing locate primarily on interior subdivision streets with limited frontage along existing thoroughfares. Usually such housing is strategically located relative to key intersections, transitions from business/industry to residential areas or in proximity to permanent parkland and open space.

10. Mobile Home Residential: These mobile home residential areas should be the locations for existing and future mobile home parks that are designed in accordance with an overall development plan and with contemporary minimum design standards for such facilities. These mobile home parks should allow for provision of necessary common services and maintenance.

11. Commercial Development: These areas include neighborhood and general highway or interchanged-related commercial types of uses, such as: convenience goods, personal and professional services, medical and business offices, shoppers goods establishments, automotive sales and services, gasoline stations/restaurants, and other similar uses. Such commercial districts should enjoy good general accessibility to their respective "trade areas" and should have limited and clearly defined direct access to and from any major thoroughfares along which they might be located as well as adequate parking and loading-unloading spaces.

12. Industrial Development: Industrial areas reflect the location of existing industrial development, allow for the expansion of existing industrial activities, and provide sites for new industrial development. New industrial lands should be reserved for the development of industrial districts where there is a conjunction of state highways and/or railroad rights-of-way or along limited access highways and state highway frontage where

12. Industrial Development (Continued)

truck transport is sufficient for hauling raw materials and products or along the shoreline where water transport is available.

13. Mineral Extraction Area: This land use area encompasses those parts of the County where geologic deposits are worked to extract minerals of commercial value, such as sand and gravel, limestone and gypsum.

14. Transportation, Utilities and Communications Facilities: These areas are located throughout the County and are intended to reflect the location and/or expansion of existing facilities such as: railroad switching yards, airports, wastewater treatment facilities, electric substations, microwave relay facilities, and similar uses.

Individual Official Township Land Use Plans

Margaretta Township's Official Township Land Use Plan:

Substantial areas within Margaretta Township have been designated as "floodway/open space/wetlands". These include the entire northern edge of the Township with the exception of the Village of Bay View and the associated development immediately to the east; the entire "Resthaven Wildlife Area-Castalia Farms and adjacent woodland area north of Thicket Road; the MillSite Farm area immediately west of the City of Sandusky; open space corridors along the length of Mills Creek through the Township and along Caswell Ditch; some wetlands just to the west of the Ohio Agricultural Experimental Station along Little Pickerel Creek; and a proposed public park facility encompassing some existing tree cover in the middle of the general area bounded by State Route 269, Parker Road, Billings Road, and Bogart-Bardwell Roads; and the existing Margaretta Township Park along Billings Road.

"Commercial" development is proposed along the northside U.S. Route 6 frontage to the west of the State Route 2 Bypass Interchange; at the southwest, northwest, and northeast sides of the State Route 4-State Route 2 Bypass Interchange, adjacent the State Route 4-Bardshar Road intersection and at the Bogart Road-Bardshar Road intersection. The latter two commercial areas are intended to serve the needs of Margaretta Township residents, whereas the interchange-related commercial development along the State Route 2 Bypass is largely for general commercial establishments with a much broader "trade area".

Substantial acreage for "industrial" development is proposed for the general area to the north and south of the State Route 2 Bypass adjacent U.S. Route 101, Homegardner Road, Bogart Road and the Mills Creek open space corridor. This particular area enjoys good general accessibility to the major highway network and the eastern side of this proposed industrial district enjoys rail access as well. One area has been designated as a "mineral extraction area", namely the Wagner Quarry along State Route 412/101 immediately south of the Resthaven Wildlife Area and southeast of the Village of Castalia.

"Medium density residential" has been designated for the large area immediately south of the Village of Castalia along State Route 269 generally north of Parker Road and west of Maple Avenue, and for the areas north and south of Miller Road and Bogart Road between Billings Road and Bardshar Road. This area is expected to be served with a public sewer collection system during the early part of the Plan period which will result in an intensification of residential development and housing at this location. "Medium high density residential" development is proposed for two areas in this same general vicinity between State Route 412/101 and Bogart Road just to the east of Maple Avenue and just to the east of Bardshar Road; this latter location is intended to serve as "buffer" area making the transition from the proposed "industrial" district and the sizeable

Margaretta Township's Official Township Land Use Plan (Continued)

"medium density residential" further to the southeast. Additional areas in Margaretta Township designated for "medium density residential" include Whites Landing, the Wilson Avenue area adjacent the mouth of Little Pickerel Creek in the northwestern corner of the Township, the Crystal Rock unincorporated settlement cluster on the Sandusky Bay shoreline, and the area to the north and south of the U.S. Route 6-Maple Avenue intersection. Two relatively small "low density residential" areas are proposed: (1) for the land north of Heywood Road east of the Owens-Illinois MillSite Farm, and (2) the triangular shaped land area bounded by State Route 2 Bypass, the Sandusky corporate limits and the vacated Norfolk and Western Railroad right-of-way. Finally, a "medium high density residential" district is recommended north and south of U.S. Route 6 adjacent the commercial district next to the State Route 2 Bypass Interchange which will reflect higher intensity development pressures in that general vicinity.

Perkins Township's Official Township Land Use Plan:

The NASA Plumbrook Facility in the southern half of Perkins Township has been designated "public and quasi-public land" because this is essentially a Federal government facility even though a number of activities contained therein are industrial in character. The assumption has been made that the federal surplus property currently on the market will be successfully disposed of over the next several years so there is a revised boundary line shown on the west side of this NASA landholding. Also designated "public and quasi-public land" on the Plan map are a series of other sites including the Oakland Cemetery and the Ohio Soldiers and Sailors Home between Columbus Avenue and U.S. Route 250 north of Strub Road, the Perkins Junior-Senior High School/Board of Education complex on Campbell Street, a Union hall facility on State Route 4, a small cemetery and an educational facility adjacent the U.S. Route 250-State Route 2 Bypass interchange and an elementary school along Douglas Drive and Columbus Avenue in the vicinity of the Wagner Quarry.

"Industrial" development is recommended to be located in the general area between Mills Creek and Old Railroad Road and along the State Route 4 frontage extending from Perkins Avenue south to the vicinity of the Union hall facility. The Norfolk and Western Railroad yards in the northwestern corner of the Township have been designated "transportation, utilities, and communications facilities". The one small portion of the Sandusky Municipal Airport located within Perkins Township also has been designated as "transportation, utilities and communications facilities".

A sizeable amount of land has been designated "commercial" both to reflect existing and future business activities in the Township. "Commercial" development is recommended for the east side frontage of State Route 4 between Perkins Avenue and extending just south of the Ohio Edison overhead transmission line in the vicinity of the Union hall facility. This

Perkins Township's Official Township Land Use Plan (Continued)

will allow for continued commercial infilling along the State Route 4 frontage and for commercial development in depth on some of the interior lands. Also designated "commercial" are the south side frontage properties along Perkins Avenue between State Route 4 and extending to about 2000 feet to the east of the U.S. Route 250 intersection. A smaller "commercial" area has been designated both north and south of Perkins Avenue along the frontage in the vicinity of Pioneer Trail and Strub Road largely to reflect existing conditions. A sizeable area for "commercial" development has been designated along the U.S. Route 250 frontage and between Strub Road and the State Route 2 Bypass interchange including the Sandusky Mall Shopping Center and related developments and encompassing the interchange related commercial in the immediate vicinity of the State Route 2 Bypass. It is recommended that the major interchange-related commercial be confined largely to the north side of the U.S. Route 250-State Route 2 Bypass interchange. One other "commercial" development area has been designated on the Plan map for the lands to the southeast and southwest of the State Route 4-State Route 2 Bypass interchange.

"Medium-high density residential" has been recommended for a number of strategic locations many of which are between the major commercial areas and adjacent single-family housing - existing or proposed; these locations include the following:

(1) A short distance north, east and south of the U.S. Route 250-State Route 2 Bypass interchange;

(2) North and southeast of the State Route 4-State Route 2 Bypass interchange;

(3) Immediately adjacent the Sandusky Mall Shopping Center;

(4) On several parcels just to the east of Lynn Drive;

(5) Between Dixie Avenue and Bell Avenue adjacent the railroad right-of-way;

(6) West of Campbell Street to the south of what be the westward extension of Stoll Avenue;

(7) Just north of Wade Boulevard between Mills Creek and State Route 4;

(8) The area south of Strub Road between Campbell Street and the railroad right-of-way; and

(9) The areas between Bogart Road and State Route 2 Bypass west of the Lake Wilmer subdivision.

Perkins Township's Official Township Land Use Plan (Continued)

The majority of the proposed areas for housing in Perkins Township have been designated "medium density residential". These include areas north and south of Perkins Avenue and Hull Road in the northeastern corner of the Township; lands adjacent Bogart Road, Columbus Avenue and Taylor Road between the NASA Plumbrook Facility and the State Route 2 Bypass, and the large land area between Columbus Avenue and State Route 4 (Hayes Avenue) north of Bogart Road and south of the commercial and industrial districts adjacent Perkins Avenue. Two smaller areas have been designated "low density residential" on the Plan map and they are lands east and west of Patten Tract Road and State Route 4 south of Bogart Road and a smaller area between the proposed commercial development at the State Route 2-State Route 4 Interchange and the relocated Sandusky Municipal Golf Course site.

In order to serve the substantial amount of existing and proposed residential development and housing several areas have been proposed for "public parkland and quasi-public recreation facilities", including an open space corridor along Pipe Creek, a proposed park site at the confluence of Cobb Ditch and Storrs-Hemminger Ditch, within the general area bounded by Campbell Street/ Strub Road/ Columbus Avenue/ State Route 2 Bypass, and a portion of the Perkins Board of Education property. The existing tree cover along the several drainage ditches to the rear of the Sandusky Mall Shopping Center should be incorporated into the one proposed park site. The provision of adequate parkland and open space is becoming increasingly important within Perkins Township because of the continued residential infilling that is occurring here.

Huron Township's Official Township Land Use Plan:

A large area has been designated "floodway/open space/wetlands" encompassing the Sheldon's Folly Wildlife Reserve and a portion of Sandusky Bay between the Cedar Point Chaussee and the mainland, and the Mud Brook bottomlands between Huron-Avery Road and the Huron River Valley. Designated as "public parkland and quasi-public recreation" facilities are the Plumbrook Country Club and Osborn County Park south of Perkins Avenue, the Keys Golf Course off Boos Road, the Thunderbird Hills Golf Club off State Route 13 south of Huron, the Huron River Valley Camp also in that immediate vicinity, a little piece of the Old Woman's Creek National Estuarine Sanctuary at the eastern end of the township between U.S. Route 6 and Berlin Road, and a finger of open space lands along Sawmill Creek, generally following the floodway to the north and west of the Bowling Green State University's Firelands College.

Designated as "public and quasi-public" land on the Plan map are the small piece of the NASA Plumbrook Facility in the far southwestern corner of the Township, the Restlawn Memorial Park Cemetery along Bogart Road, the Bowling Green State University Firelands College and the Sawmill Creek wastewater treatment plant facility adjacent the Sawmill Creek recreation complex.

Huron Township's Official Township Land Use Plan (Continued)

A major area of "low-density residential" development is proposed for the lands generally south of Hull Road east of Galloway Road, immediately north and south of Boos Road and Bogart Road, and to the west of the Sawmill Creek floodway. A second area of "low-density residential" development is recommended for the lands between Chaska Beach and Anderson Beach and Berlin Road to the east of the Huron corporate limits into the west of Old Woman Creek National Estuarine Sanctuary "Medium-density residential" development is proposed for the lands southwest of the Bowling Green State University's Firelands College and adjacent the inlying portions of Rye Beach Road, Fox Road and Huron-Avery Road. A series of small areas have been designated for "medium-high density residential" development including in the vicinity of Plumbrook Country Club, on the south side Cleveland Road frontage opposite the Sawmill Creek recreation complex, adjacent the Firelands College of Bowling Green State University, off Rye Beach Road along Huron-Avery Road, adjacent the Mud Brook floodway, between the DuPont industrial landholding and Berlin Road just east of the Huron corporate limits. All of these areas are strategically located relative to commercial, industrial, or open space lands and reflect higher intensity development pressures or capitalize upon their proximity to adjacent open space.

"Industrial" development is proposed for the lands adjacent the Norfolk & Western Railroad along River Road, Jeffries Road and Sprowl Road. "Commercial" development has been recommended for the Cleveland Road frontage extending northwesterly from the Sheldon's Folly Wildlife Reserve and Saw mill Creek recreation complex, and for the Rye Beach Road-State Route 2 interchange area. Commercial development should not be permitted to encroach into the interior of Huron Township's residential areas because that would diminish substantially their attractiveness, take away from their desirability for residential development and housing.

Berlin Township's Official Township Land Use Plan

"Commercial" development is recommended to be concentrated in the immediate vicinity of the State Route 61-U.S. Route 6 intersection so that it does not scatter and strip out along the entire length of the U.S. Route 6 frontage through Berlin Township. An area on the west-central portion of the Township has been designated for "industrial" development largely between Knight Road and the Norfolk & Western Railroad right-of-way and between Wikel Road and Jeffries Road. This constitutes an extension of the larger industrial district in Huron and Milan Townships immediately adjacent this location.

Two areas immediately adjacent to Old Woman Creek National Estuarine Sanctuary are recommended for "low-density residential" development - the lands northwest of Barrows Road and between Barrows Road and the floodway along the tributary of Old Woman's Creek, and the area immediately west of the National Estuarine Sanctuary. south of U.S. Route 6 both east and west

Berlin Township's Official Township Land Use Plan (Continued)

of State Route 61, and the lands in the Oberlin Beach area. The coastal lands extending west to the Ruggles Beach area are recommended for "medium density residential" development except for one area designated as "mobile home residential" to reflect several existing mobile home parks and their expansion, and a proposed open space corridor along Cranberry Creek and its tributary stream just south of Ruggles Beach. One other area has been designated "medium density residential" and that is the area just east of the Village of Berlin Heights largely to the south of Main Road and east of Bellamy Road.

There is proposed a "floodway/open space/wetland" area just east of this proposed residential development, to encompass several inland wetlands so as to ensure their protection. Several additional areas have been designated "floodway/open space/wetlands" including the Old Woman Creek National Estuarine Sanctuary, the floodway and associated open space further upstream along Old Woman's Creek and a tributary stream and along Chappel Creek south of Mason Road on the eastern side of the Township and along Cranberry Creek between the Conrail right-of-way and its outlet into Lake Erie at Ruggles Beach. In view of the fact that the Berlin Heights Nuclear Electric Generating Station is not to be built, it is recommended that serious consideration be given to the feasibility of the Ohio Department of Natural Resources acquiring from Ohio Edison Company its 1,740-acre landholding and to interconnect this with the Old Woman's Creek National Estuarine Sanctuary so as to constitute a major parkland and recreational facility in this location. In the interim this large landholding has been designated "transportation, utilities and communications facilities" in terms of the land ownership.

Vermilion Township's Official Township Land Use Plan:

Certain areas adjacent the City of Vermilion are recommended to be areas for community expansion. "Medium density residential" development is recommended for the general area between the Conrail right-of-way and the Lake Erie shoreline extending from the Vermilion corporate limits to Orchard Beach/Darby Creek area, and for the lands between the corporate limits and Sherod Creek between the two railroad rights-of-way and the areas north and south of Kneisel Road as well as certain lands adjacent Coen Road and adjacent State Route 60 northwest of its intersection with Darrow Road. Several additional areas have been designated for "medium density residential" development including the Volunteer Bay area and vicinity, the area between the Chappel Creek open space corridor and Poorman Road and the general area in the vicinity of Mitiwanga and Heidelberg Beach extending inland as far as the Conrail right-of-way. All of these areas are recommended for new residential development and housing, to take advantage of their proximity to the Lake Erie shoreline and to ensure the protection of the residential areas in this vicinity.

Vermilion Township's Official Township Land Use Plan (Continued)

A large area for "low density residential" development has been designated in the southwestern part of Vermilion Township between Mason Road and Darrow Road, between Darrow Road and Thompson Road, and due west of the Vermilion Fish and Game Club landholding. This is a scenic area and relatively low residential densities will enable much of the existing tree cover to be preserved. Wherever possible on the larger landholdings, a planned unit development procedure should be utilized, once again, in order to preserve to the maximum extent possible, the natural features on those particular sites. A second area has been designated "low density residential" on the Plan map and this is an area along either side of Furnace Road and Barnes Road between and south of the Chappel Creek and Sugar Creek open space corridors.

Four separate areas are proposed for "medium-high density residential" development southwest and northeast of the State Route 60-State Route 2 interchange and along Coen Road in the vicinity of State Route 2 and of Kneisel Road. "Mobile home residential" is proposed for the area bounded by Poorman Road, U.S. Route 6, the Sugar Creek open space corridor and the Conrail right-of-way and for a second area to the east of Orchard Beach along the coastal zone west of Coen Road.

Designated as "public parkland and quasi-public recreation facilities" are the Willow Creek Golf Club just south of the City of Vermilion, the Vermilion Fish and Game Association landholding along Thompson Road, the golf course just south of Orchard Beach and the City of Vermilion's Sherod Park along U.S. Route 6 frontage at Coen Road.

"Commercial development" is recommended for the area immediately adjacent the State Route 60-State Route 2 Interchange and for an area within the coastal zone between Orchard Beach and Bluebird Beach. These recommendations are intended to suggest that additional commercial development be concentrated within compact districts at several locations rather than continue to be stripped out along the U.S. Route 6 frontage. "Industrial" development is recommended for the general area to the west of Sherod Creek, east of the Darby Creek open space corridor, south of the Conrail right-of-way, and extending south in one segment to the State Route 2 right-of-way. This should allow for new industrial development to occur within the Township, yet keep it separated to a large extent, from the majority of the Township's residential development and housing.

The primary function of Vermilion Township in future years will be to serve as a residential area. Commercial and industrial development will occupy a relatively limited part of the Township's land base, and while agriculture will continue to be operated in the Township, such farming will become less important a factor over the Plan period. One small portion of the Ohio Edison Company landholding extends into the far south-

Vermilion Township's Official Township Land Use Plan (Continued)

western corner of Vermilion Township and as mentioned above in the section on the Berlin Township's Official Township Land Use Plan, the future usage of that landholding now is unclear in the light of the recent decision not to construct the electric generating station.

Groton Township's Official Township Land Use Plan:

The large Norfolk and Western Railroad Yard along the southern edge of the Township has been designated in the "transportation, utilities, and communications facilities" classification. This railroad yard property occupies the single-largest amount of land in the Township and the other major land use category in Groton Township includes the Sandusky Crushed Stone Company Quarry which has been designated "mineral extraction area" on the Plan map. Linear corridors along Mills Creek, Snyders Ditch, and Pipe Creek have been classifed in the "floodways/open space/wetlands" category as well as a sizeable pocket of lowlands in the immediate vicinity of the Knauss Road-State Route 269 intersection.

A series of relatively small areas have been designated "low density residential" development, both to reflect existing conditions within the Township and to allow for a modest amount of population growth over the Plan period; these include the following:

(1) Lands adjacent Potter Road and State Route 269 in the southwest corner of the Township;

(2) Lands at Parkertown adjacent the Portland Road-Billings Road intersection; and

(3) The Sand Hill area adjacent Mason Road, State Route 99 and State Route 4.

Two small areas have been designated to accommodate "commercial" development in the Township - one in the Parkertown area, and a second in the Sand Hill area. In addition, one area has been designated "public and quasi-public" land - the Ohio Department of Transportation garage facility along Dining Road between Southwest Road and State Route 269 north of the Ohio Turnpike.

Oxford Township's Official Township Land Use Plan:

The southwestern portion of the NASA Plumbrook Facility remains the largest single land use in Oxford Township and this federal landholding has been designated "public and quasi-public land" on the Plan map. It should be noted that portions of the existing Federal landholding are in the

Oxford Township's Official Township Land Use Plan (Continued)

process of being disposed of as surplus property so that additional lands north of Mason Road will become available for agricultural cultivation within the very near future. Four different areas have been designated in the "floodways/open space/wetlands" category including the West Branch Huron River bottomlands in the southeast corner of the Township, the former quarry property north of the Ohio Turnpike and west of Ransom Road, certain low lying lands along Pipe Creek in the northwestern corner of the Township, and the Church Park in the vicinity of the Thomas Road-Mason Road intersection.

Two areas have been designated "low density residential" on the Plan map, both to reflect existing conditions and to allow for future residential construction, including the unincorporated settlement cluster of Kimball in the vicinity of the Delematre Road and adjacent the intersection of Mason Road and Patten Tract Road in the northwest corner of the Township. A provision has been made for a "commercial" district along Mason Road in the vicinity of the Jeffries Road intersection. The remaining land throughout Oxford Township is scheduled to remain in agricultural cultivation and most of this land is classified as "prime" agricultural land which should be preserved. Certain of the bottomlands associated with the West Branch Huron River and its tributary stream are somewhat less productive in character. The Milan Wildlife Area in the far southeastern corner of the Township has been designated "public parkland and quasi-recreation facilities".

Milan Township's Official Township Land Use Plan:

An extensive amount of land has been designated "floodways/open space/ wetlands" largely to reflect the floodplain lands along the Huron River Valley and its tributary streams. This category encompasses lands to the east and west of the Village of Milan and extends northeast from the Village of Milan all the way to the far northeast corner of the Township, plus an open space corridor along the tributary stream between Huron-Avery Road and Mason-Mud Brook Road.

A series of lands has been designated "public and quasi-public" land on the Plan map including the southeastern portion of the NASA installation, the future EHOVE Vocational School site on Mason Road, and the Cemetery north of State Route 113 at McIntyre Road. There are several areas designated for "public parkland and "quasi-public" recreation facilities" including the re-use of the Erie County Sanitary Landfill site on Hoover Road southeast of Huron-Avery Road for park purposes; and the 25-acre Galpin Wildlife area of ODNR on Seminary Road.

A sizeable "industrial" district has been recommended for the general area bounded by the Ohio Turnpike on the south, and Mason Road on the north; and State Route 13-Huron Valley floodplain on the east. This particular

Milan Township's Official Township Land Use Plan (Continued)

industrial district enjoys the competitive advantages of immediate access onto the Ohio Turnpike but will require the extension of a wastewater collection system from the north in order to realize its full potential. Two "commercial" districts are proposed in the immediate vicinity of the U.S. 250-Ohio Turnpike Interchange directly south and north of the interchange ramps at that location.

An area of "medium high density residential" is recommended south of Strecker Road in this same interchange area. A second "medium-high density residential" area is proposed for the general area north of Bryan Road west of U.S. Route 250. Six different other areas are also proposed for new residential development and housing to allow for community expansion in the vicinity of Milan once public sewers have been extended to serve this general area:

(1) "Medium density residential" development between and adjacent State Route 113 and Bryan Road, north and south of State Route 113 largely east of its intersection with Jeffries Road and in the vicinity of Seminary Road and Perrin Road.

(2) "Low density residential" development adjacent the State Route 13-Hoover Road-Horn Road triangle; adjacent Riley Road and Fisk Road; and adjacent the intersection of Jeffries Road and Old River Road.

Florence Township's Official Township Land Use Plan:

The largest percentage of Florence Township's land area is recommended to remain in agricultural cultivation throughout the duration of the Plan period. The Vermilion River Valley floodplains and associated lands are designated on the Plan map as "floodways/open space/wetlands" as is the linear corridor along the East Fork of the Vermilion River. In addition, certain lands have been designated "public parkland and quasi-public recreation facilities" including certain existing and potential landholdings of the Lorain County Metropolitan Park District in the vicinity of Birmingham; certain potential parkland north of the Ohio Turnpike adjacent the county line and a sizeable landholding in the southeastern corner of the Township to reflect the Camp Timberlane facility of the Girl Scout Council.

Two areas have been designated "low density residential" development - a large area in the north-central portion of the Township along adjacent Mason, Angling and Harrison Roads and a small area to the east of Birmingham along the county line.

Florence Township's Official Township Land Use Plan (Continued)

"Medium density residential" development has been recommended to reflect the existing residential development and housing at Birmingham as well as to allow for additional housing immediately to the southwest and northwest. A second area is designated for a combination of "low" and "medium density residential" development for the unincorporated settlement cluster of Florence and vicinity, once again to reflect existing residential development and to allow for additional residential construction over the Plan period. One area is proposed for "medium high density" residential development located to the east of State Route 60 north of its intersection with State Route 113 and adjacent the Vermilion River Open Space Corridor.

The lands immediately to the northwest of the State Route 113-State Route 60 intersection are recommended for "commercial" development to serve as the business district for the existing and proposed housing within Florence Township. "Industrial" development is recommended to be located to the west of State Route 60 generally between and to the north of the Cleveland Quarries landholding. This quarry has been designated as a "mineral extraction area" on the Plan map.

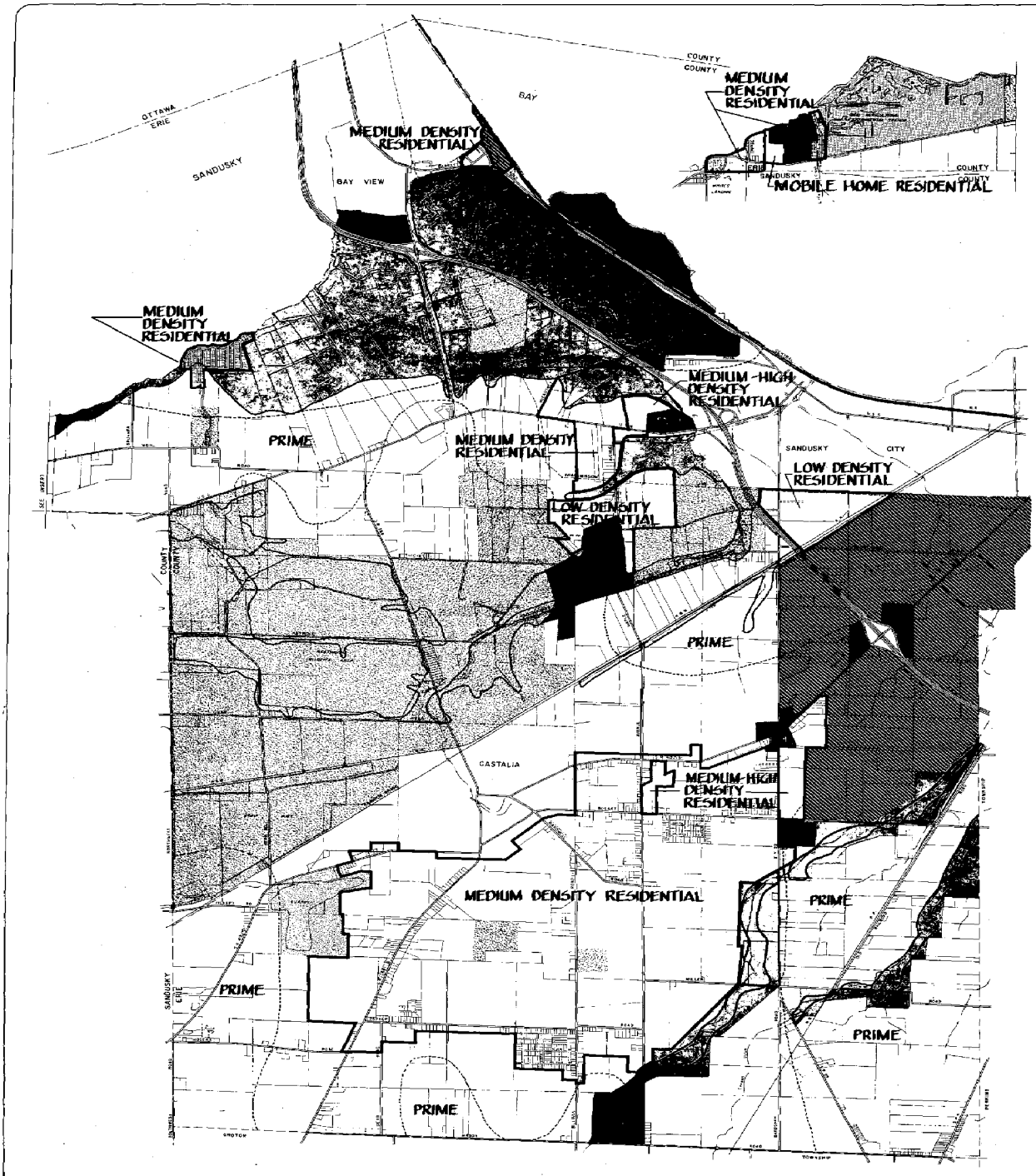

Plate 8

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
MARGARETTA TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

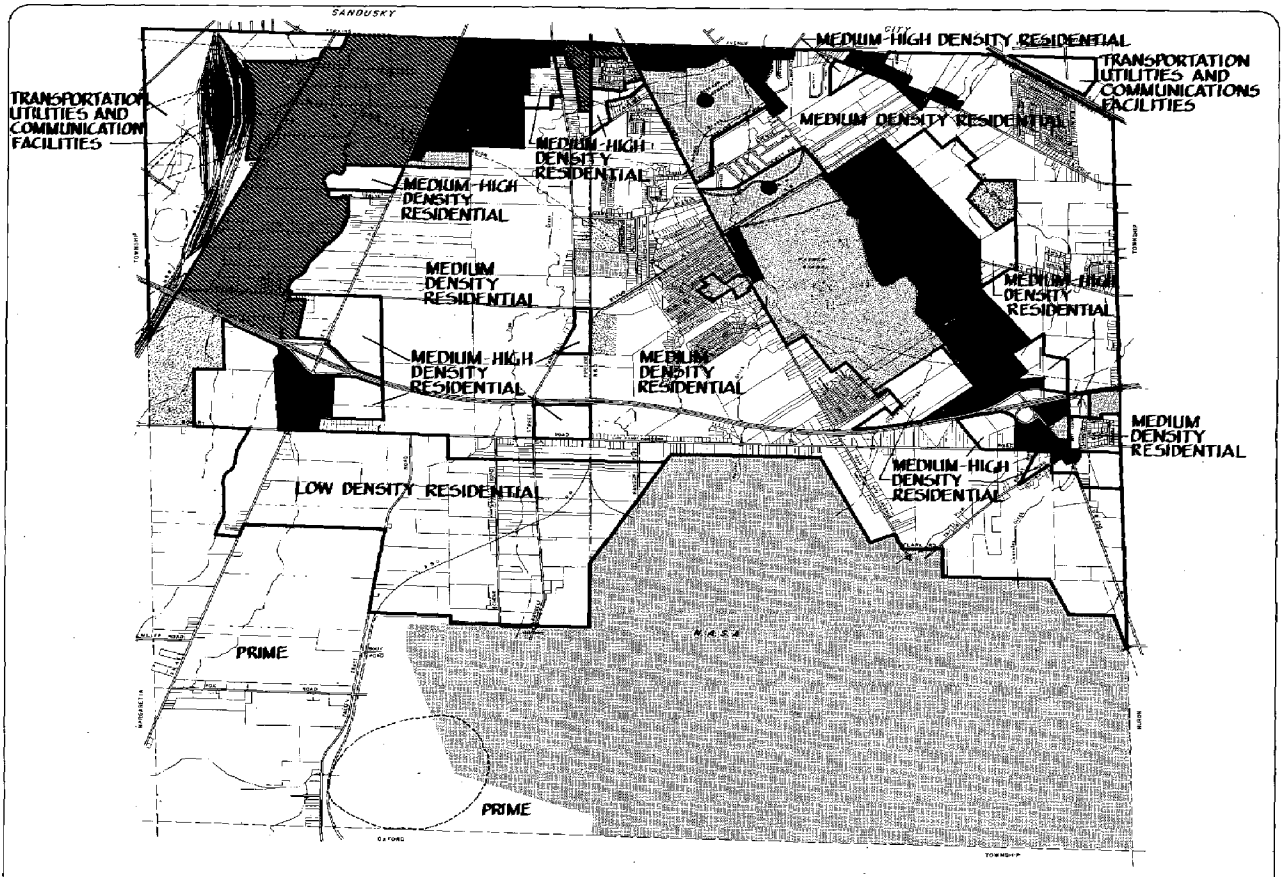

Plate 9

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY

PERKINS TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission

DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

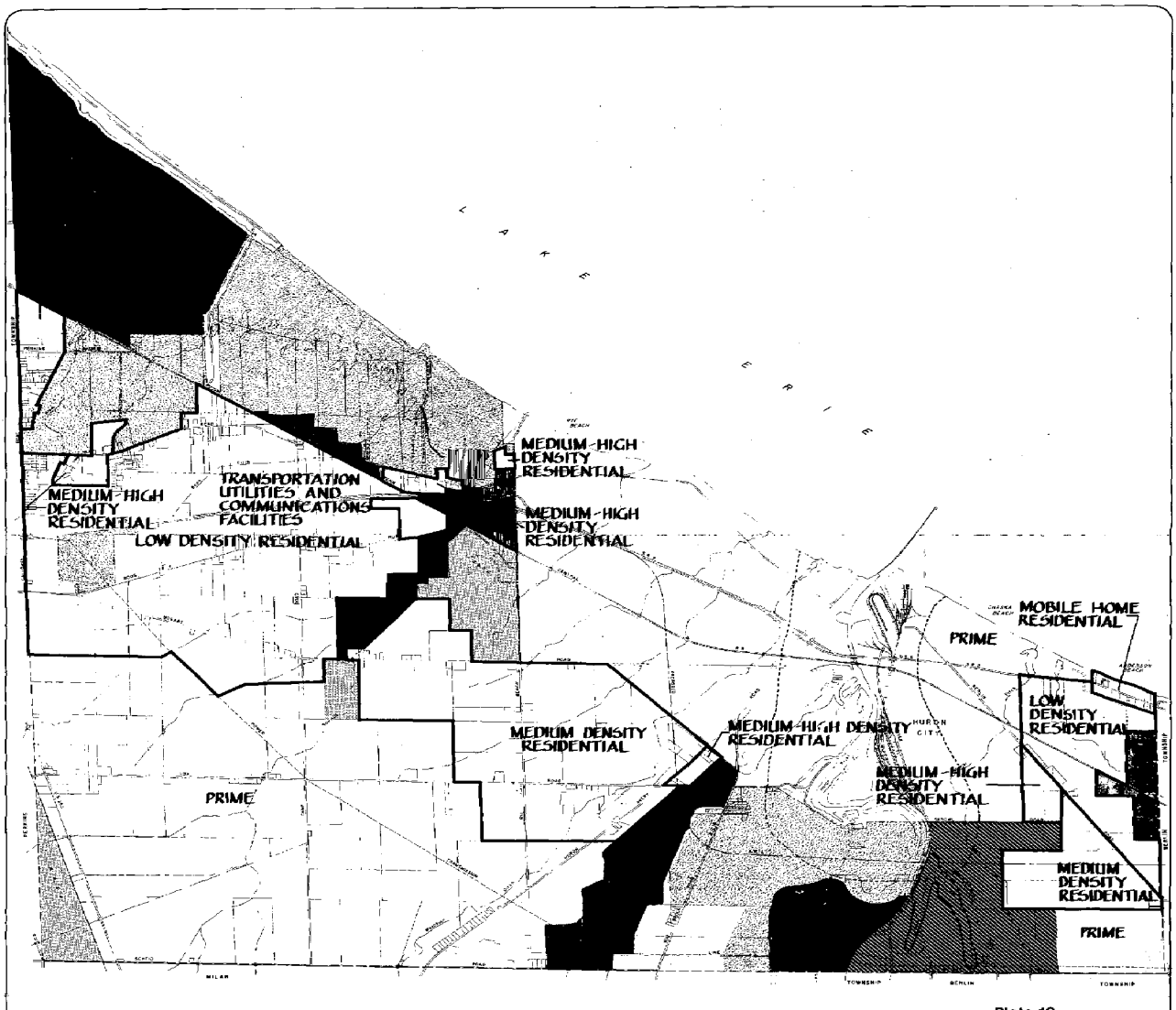

Plate 10

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
HURON TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

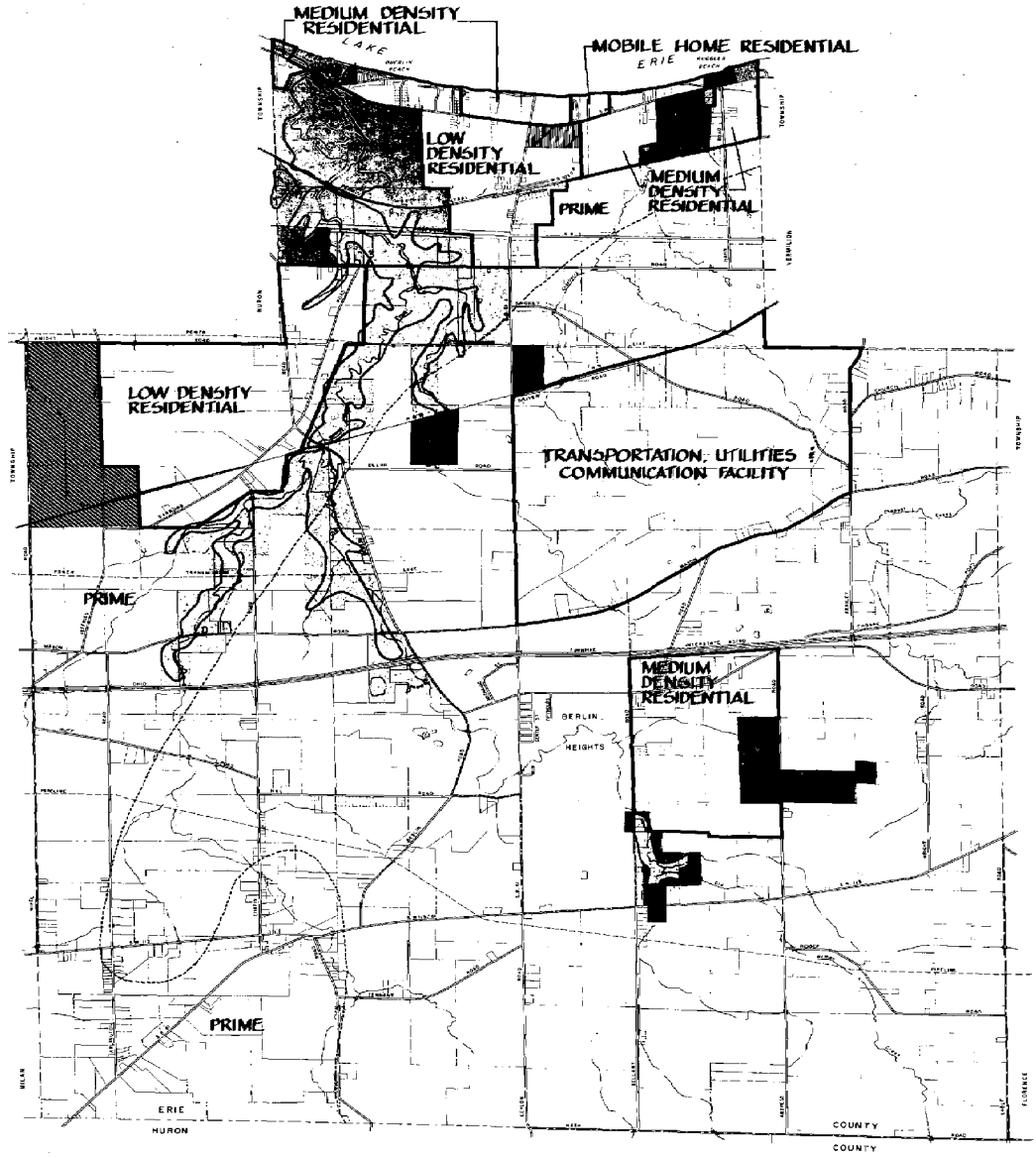

Plate 11

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY

BERLIN TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission

DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

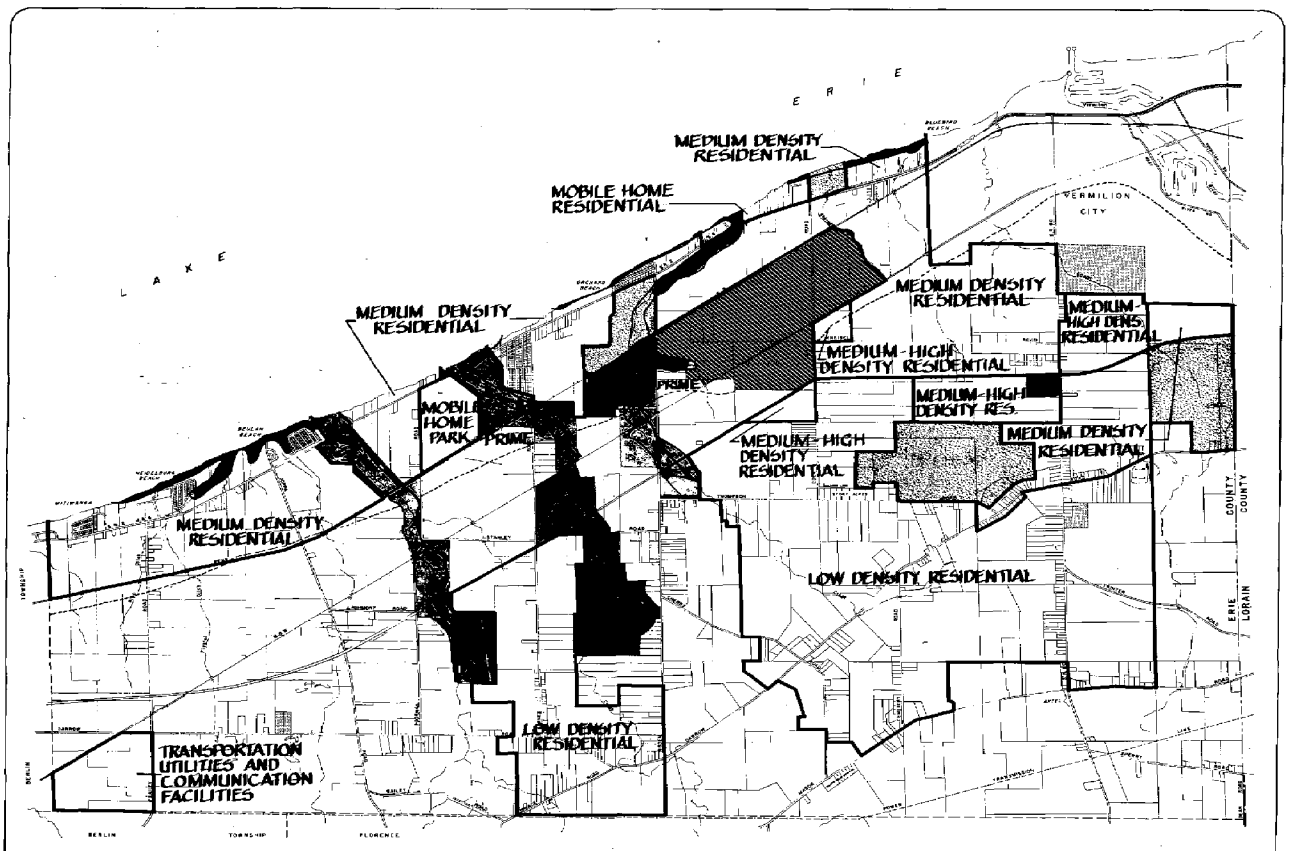

Plate 12

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

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- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY

VERMILION TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission

DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

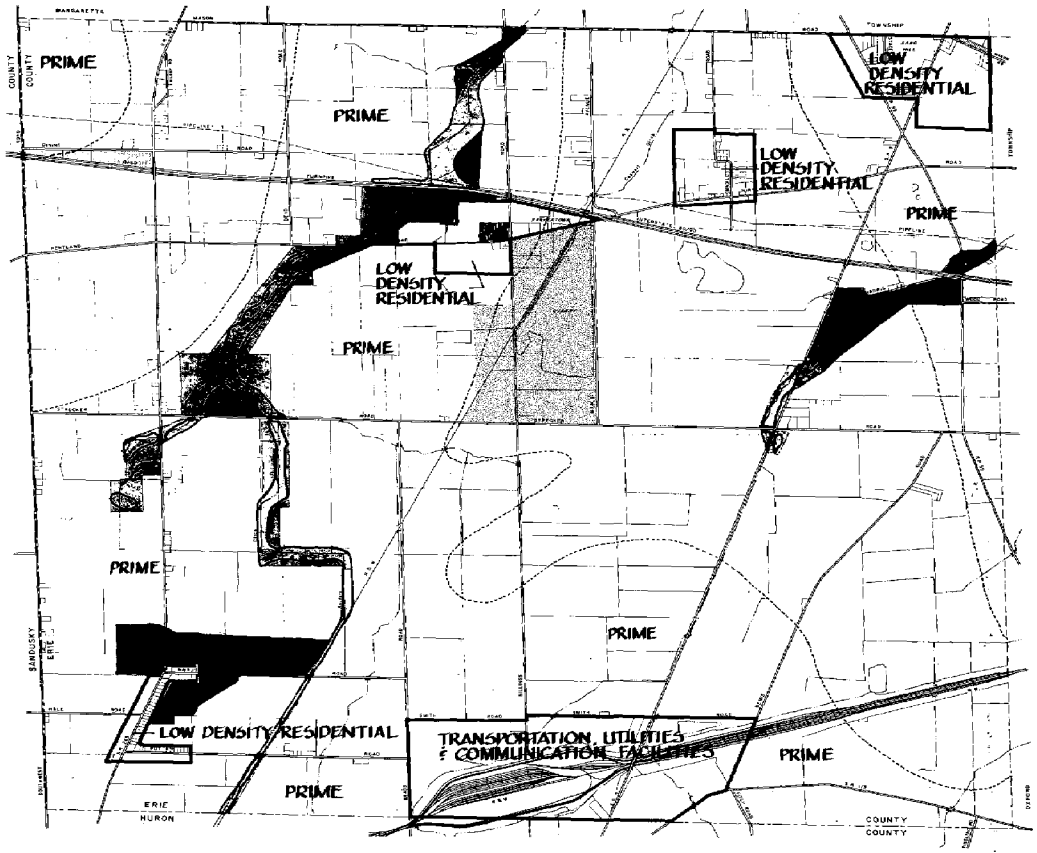

Plate 13

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
GROTON TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

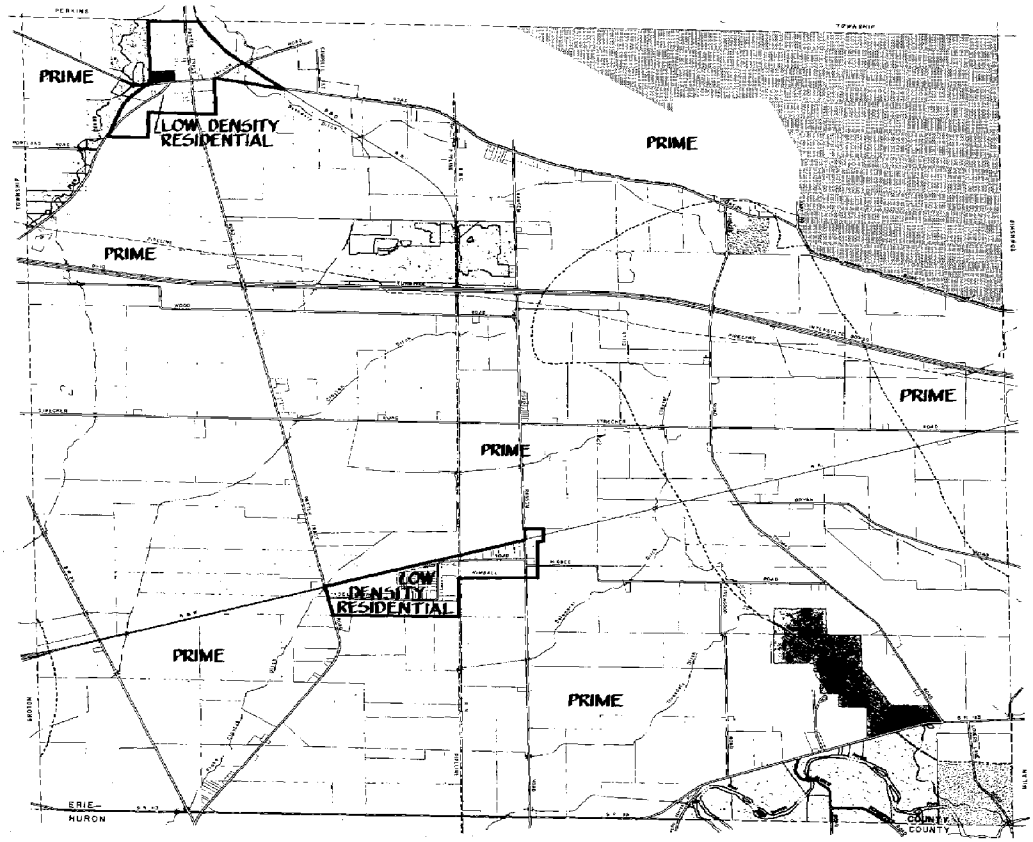

Plate 14

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
OXFORD TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

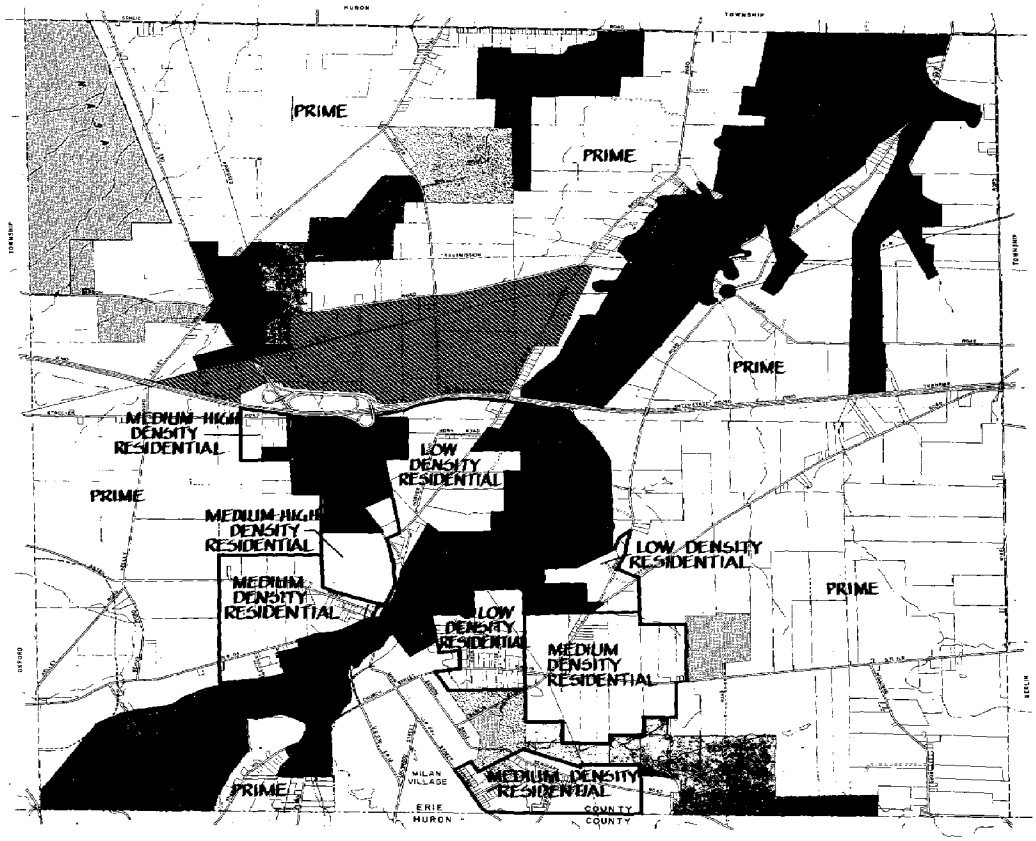

Plate 15

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
MILAN TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

WOOLPERT CONSULTANTS

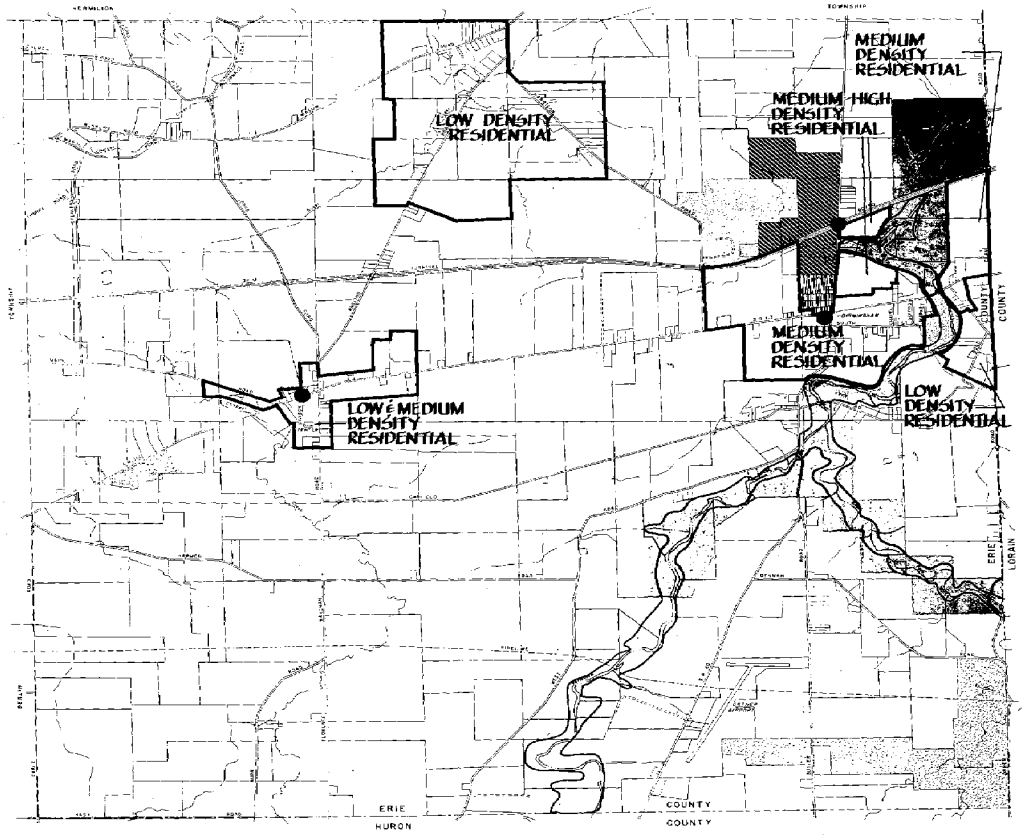

Plate 16

Planned Land Use Areas

- VACANT AND AGRICULTURAL LAND
- PRIME AGRICULTURAL LAND
- FLOODPLAIN/OPEN SPACE/WETLAND
- PUBLIC AND QUASI-PUBLIC LAND
- PARKLAND AND RECREATIONAL FACILITIES*
- HISTORIC PRESERVATION AREA (Historic Sites and Centennial Homes)

*Includes both public and private facilities

- LOW DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM DENSITY RESIDENTIAL DEVELOPMENT
- MEDIUM HIGH DENSITY RESIDENTIAL DEVELOPMENT
- MOBILE HOME RESIDENTIAL DEVELOPMENT
- COMMERCIAL DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- MINERAL EXTRACTION AREA
- TRANSPORTATION, UTILITIES AND COMMUNICATIONS FACILITIES

ERIE COUNTY
FLORENCE TOWNSHIP

OFFICIAL TOWNSHIP LAND USE PLAN

graphic scale in feet

NORTH

BASEMAP SOURCE: Erie Regional Planning Commission
DATA SOURCE: Woolpert Consultants, Erie Regional Planning Commission

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CHAPTER VIII

PLAN ADOPTION AND IMPLEMENTATION MEASURES

Plan Adoption and Amendment Procedures

The formal procedure to adopt the Erie County Official Land Use Development Plan should be as follows. The Erie Regional Planning Commission members need to vote to recommend to the Erie County Board of County Commissioners that they formally adopt the Official Land Use Development Plan. Following such an affirmative vote, the Secretary of the Regional Planning Commission should certify the Plan and transmit the Plan to the Erie County Board of County Commissioners and to the Board of Trustees of the nine townships within Erie County. Prior to taking formal action on the proposed Plan, the Erie County Board of County Commissioners may hold a public hearing, although this is not specifically required in the State enabling legislation. It is strongly recommended that the Board of County Commissioners pass a resolution adopting the Official Land Use Development Plan for Erie County. Upon such formal adoption, the Secretary of the Regional Planning Commission should certify a copy of the Plan to the Erie County Recorder so that it may be officially recorded as a public document, and should also certify additional copies of the Plan to the various townships and municipalities within Erie County to become a part of their official records. It is also proposed that each individual township in Erie County formerly adopt both the Official Land Use Development Plan for the entire County and the individual Official Township Land Use Plan for their particular township.

It should be clearly stated that the Erie County Official Land Use Development Plan is not an inflexible framework. The Plan proposals are not "fixed in concrete". The Plan may be amended, in part or the whole of it, when this is demonstrated to be necessary to take into account changing area conditions; to better accomplish stated County development goals and objectives and/or to reflect certain changes stemming from detailed planning at the community level. What is important is that the Plan be utilized in a consistent manner in the regulation of future growth and development within the local area.

Plan Update Procedure

The Erie County Official Land Use Development Plan should be formally updated in its entirety once every five years, and certain revisions may be appropriate even prior to that time. For example, as the results of the 1980 Census do become available, data from that source and subsequent analysis of that information may have implications which cause certain details of the Plan to be modified. Major, unanticipated changes in the local or regional economy might necessitate some update of the Plan during the intervening years. What is important to remember is that the Official Land Use Development Plan is a working framework and a statement of public

Plan Update Procedure (Continued)

policy toward future growth and development and should be utilized as such.

Related Plan Implementation Measures

Among the most important tools which Erie County has to carry out the provisions of this Official Land Use Plan are the different county and township zoning regulations, County Subdivision Regulations, and the County's capital improvement budgeting for future public expenditures. It is recommended that the respective zoning regulations in effect in the County's various townships be evaluated in the light of this Official Land Use Plan and individual Official Township Land Use Plans to determine if and where text and/or map revisions should be made to incorporate certain provisions of the Plan. In this process it is important to formulate a workable zoning strategy which takes into account the fact that not all future land uses will be reflected at this particular point in time, but that adequate provision needs to be made for land use development that may reasonably be expected over the short run to occur. One important use of the Erie County Official Land Use Plan is to provide a policy framework for making zoning decisions at the Township level on the basis of a consistent set of criteria that have been thought out in advance and which relate to the capability of individual townships to accommodate development, the County's recommended development goals and objectives and generally accepted planning principles and standards.

The County Subdivision Regulations provide the County with an orderly means of regulating the layout and subsequent development of new subdivisions on vacant, developable land throughout the unincorporated portions of Erie County. The intent of these Subdivision Regulations is the following:

(1) To protect Erie County against having to install necessary public improvements in a new residential subdivision where lots have been sold by the developer and no public improvements or substandard public improvements have been installed.

(2) To provide the prospective home buyer in Erie County with a reasonable guarantee that public improvements in his/her residential subdivision will be properly designed.

(3) To minimize development costs in the urbanizing portions of Erie County.

(4) To allow Erie County to coordinate the various subdivision plats in accordance with the provisions of this Official Land Use Plan and the County's Official Thoroughfare Plan.

Related Plan Implementation Measures (Continued)

(5) To ensure that the minimum design of new residential subdivisions in Erie County's unincorporated land areas will be sufficient to meet the needs of those County residents so as to maintain individual home values and to prolong the economic life of residential homes throughout the County.

(6) To ensure adequate road and street rights-of-way and pavements for the expected vehicular traffic at those locations.

(7) To reserve land areas for future school and park sites in advance of their actual development.

It is recommended that Erie County review and evaluate the adequacy of the County Subdivision Regulations to meet the current land use control needs within the County.

It is also recommended that Erie County consider as a "next step" the update of public facilities planning and related capital budgeting in order to outline a workable framework for future public expenditures within Erie County. A number of these public expenditures should be oriented to help facilitate implementation of this Official Land Use Plan and related Official Township Land Use Plans.